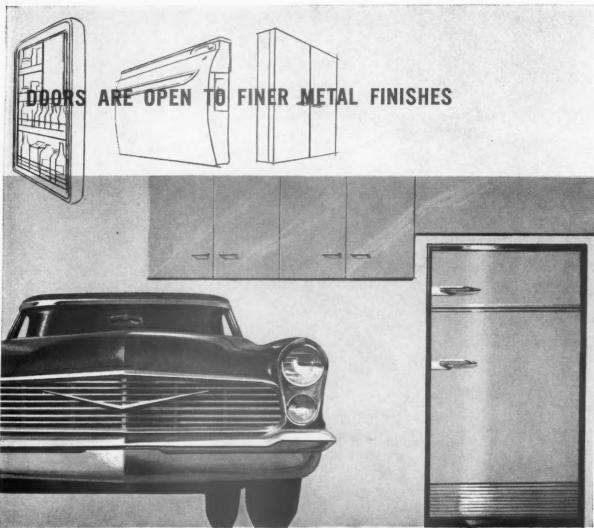
# PAINT and VARNISH

THE TECHNICAL MAGAZINE FOR MANUFACTURERS OF PAINT, VARNISH, LACQUER AND OTHER SYNTHETIC FINISHE





# TEST RCI'S NEW MELAMINE RESINS

• If you make a line of quality baking enamels, you will be interested in the outstanding properties you can achieve with the new RCI melamines. Take for example RCI Super-Beckamine 3555-60 — an aromatic solvent-soluble melamine-formaldehyde resin.

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Why not write for full information on SUPER-BECKAMINE 3555-60? When you write ask for *Technical Bulletin SC-16*, which includes suggested formulations and details of tests involving enamels made with competitive melamine resins.

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### Formerly PAINT and VARNISH PRODUCTION MANAGER

(Established in 1910 as The Paint and Varnish Record)

**APRIL**, 1957

NO. 5

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An informative se dealing with a study of three years outdoor exposure with years outdoor exposure with acrylic emulsion paints will begin with our May issue. This series will summarize the present state of knowledge on the exterior exposure characteristics of acrylic paints and point how these paints can be formulated for best outdoor results.

Published Monthly by Powell Magazines, Inc. Executive and Editorial Offices 855 Ave. of Americas New York 1, N. Y. **BRyant 9-0498** 

JOHN POWELL, Publisher

ANTHONY ERRICO, Editor

A. L. BENDER Production Manager

ABRAHAM MANN

Editorial Ass't.

MARY WILLIAMSON

Circulation Manager

PHILIP J. SEAVEY

Advertising Manager

ALAN P. DANFORTH

855 Ave. of Americas New York 1, N.Y. **BRyant 9-0498** 

DUNCAN P. MACPHERSON

700 S. Washington Sq. Philadelphia, Pa. LOmbard 3-9982

Advertising Representatives

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**VOL. 47** 

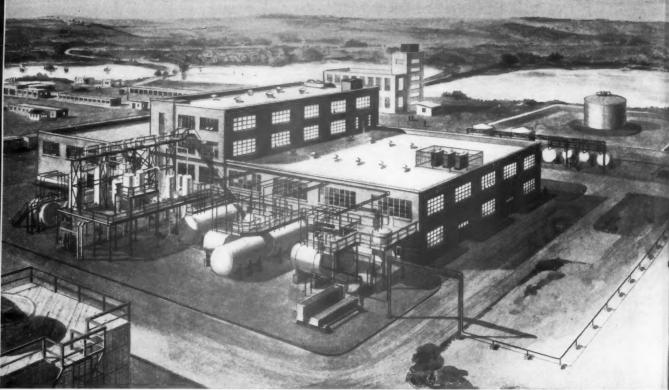
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MEMBER BUSINESS E PA PUBLICATIONS AUDIT, INC.

PAINT and VARNISH PRODUCTION is published monthly except semi-monthly in February at Easton, Pa. by Powell Magazines, Inc. John Powell, president; Ira P. MacNair, vice-president and treasurer; Alice L. Lynch, secretary. Entered as second class matter at Post Office at Easton, Pa., Jan. 30th, 1952, under the Act of March 3, 1879. Subscripton rates: United States and Possessions, \$3.00 a year, \$5.00 for two years, \$10.00 for five years. Single copies 50c each. Canada, \$4.00 a year. Pan American Countries, \$4.00 a year. All other countries \$8.00. Editorial and business office: 855 Avenue of the Americas, New York 1, N. Y. BR-9-0498.

A PROGRESS REPORT ...



Architect's drawing of new pentaerythritol plant at Fords, N.J.

more

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### to meet industry's growing demands

A new plant—with an annual capacity of 25,000,000 pounds—will be on stream this summer—turning out Heyden Newport's full line of Pentek® brand pentaerythritols.

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### Spring and Auto Sales

PTIMISM prevails as paint sales figures for January showed a decided upturn over the previous month of December. Total sales for January were \$125,401,000 compared with \$97,308,000 in December 1956. This represented an increase of 28.9%. In analyzing industrial sales and comparing January 1957 with January 1956, gains were noted in all segments—an indication that the production of consumer goods have perked up.

However, one of the "iffy" spots in our industrial activity today is the automotive industry, since spring sales will pretty much determine how that industry will fare for the remainder of 1957. In 1955, which was the best year in the history of the automobile industry, 7,920,186 cars were assembled. Last year was disappointing compared to the record of 1955, and yet 5,801,315 cars were turned out—making 1956 the fourth best year. Will this year's spring sales have enough thrust to catapult the automotive industry into a total volume of 6½ million units for 1957? This is a question which is puzzling Detroit to-day.

Many automotive spokesmen are still adhering to their early prediction of  $6\frac{1}{2}$  million units. Confidence in reaching this goal was demonstrated by the industry investing some \$1,250,000,000 for restyling this year's models. However, the facts show that total automobile production, as of the middle of last month, amounted to 1,664,119 units and represents only a slight increase over a like period last year. At this

pace, it is expected that some 1,800,000 cars will be produced in the first quarter which is about a 4 percent increase over the first quarter of 1956.

Buyer's resistance, especially for higher priced models, have had its effect on the overall sales picture of automobiles. In order to move mounting stock of new cars, most dealers are offering discounts, no down payment, etc. as inducements to prospective buyers.

Judging from the above facts and figures, it seems that the automotive industry has quite a job ahead to fulfill its goal of 6½ million cars this year. The next three months will be most decisive.

### Another Peeling Problem

7HILE we are on the subject of automobiles, it was recently brought to our attention that the New York State Motor Vehicle Bureau has temporarily suspended the manufacture of new automobile license plates. Reason behind this suspension is that the bureau is looking for a new paint that will not peel when it comes in contact with heavily salted slush. A spokesman said that the bureau has received hundreds of complaints over the last two months about the peeling of enamel on the 1957 license plates. As a resident of New York State, your editor took a special interest in this problem and found that the plates on those automobiles which frequently traversed the New York State Thruway showed considerable paint peeling, while in other cases, peeling was only very slight. Apparently, the heavy use of salt to keep this highway free of ice is the culprit.

NITROETHANE

CH3CH2NO2





NITROMETHAN

CH3NO2











NITROPROPANE CH3CH2CH2NO2









#### IMPRO AND



2-NITROPROPANE CH3CHNO2CH3







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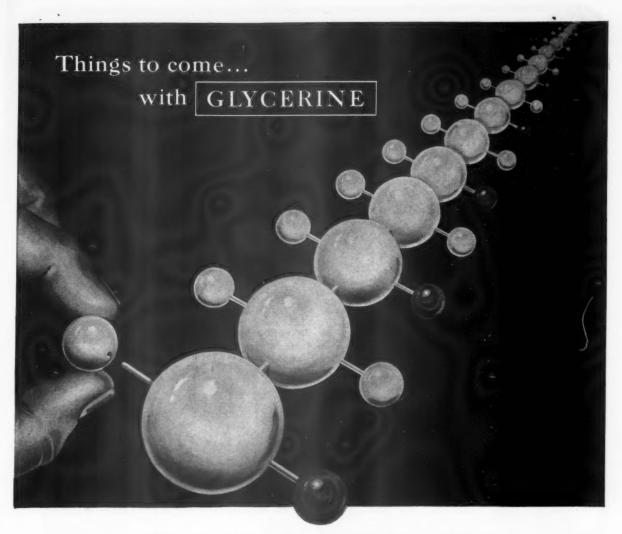




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\*Developed by Dr. G. Oster, Polytechnic Institute of Brooklyn

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## Glycerine Producers' Association

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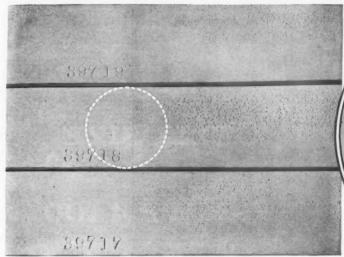


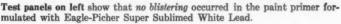
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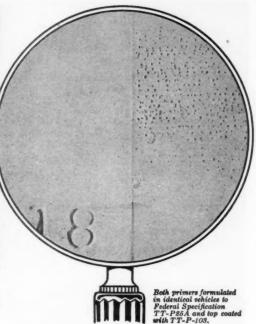
WRITE FOR COMPLETE INFORMATION!

## Compare the difference in these two paint primers!





Test panels on right show definite blistering in the paint primer formulated with an equal volume of a highly reactive lead pigment. Compare the difference in the magnified area on extreme right.



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6% Mn	.03	
	14.68 lbs.	

PVC-35.5%

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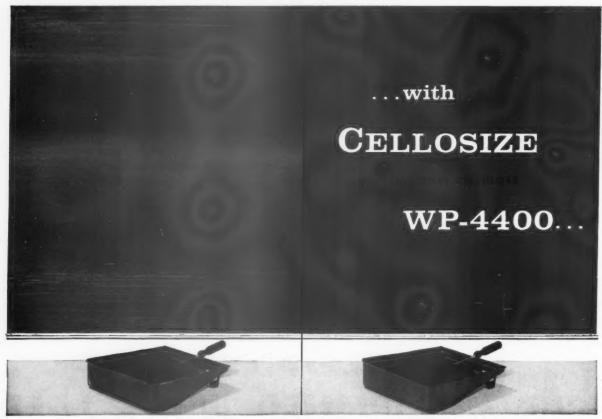
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- Contributes to mechanical, freeze-thaw and viscosity stability
- Won't gel at elevated temperatures

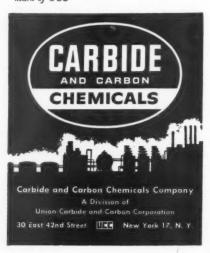
### In Application

- Contributes to better scrub resistance and washability
- Improves brushing, leveling, and flow-out
- Gives excellent color values, especially with popular deep decorator colors
- Reduces sheen variation
- · Reduces pinholing
- Helps improve hiding power

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SOYA	Water White Distilled RO-10 RO-11-S	135 Min. 124 Min. 124 Min.	20-23 23-29 23-29	2 Max. 5-6 Max. 4 Max.	195-205 195-205 195-205
SOYA-TYPE	RO-8	115 Min.	30 Max.	6-8	195-205
COTTONSEED	Double Distilled	95-110	32-38	8 Max.	195-205
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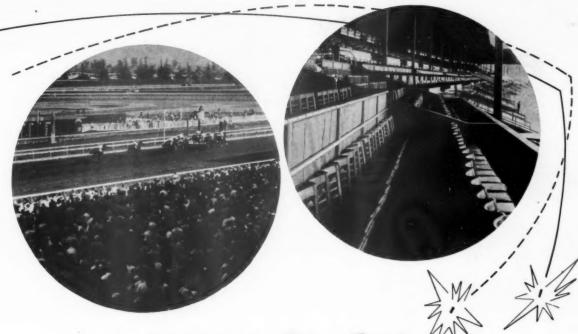


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(one of a series)

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E represents the average of eight paints tested

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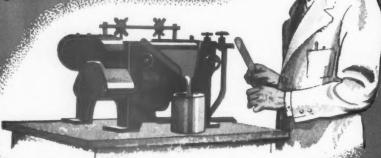


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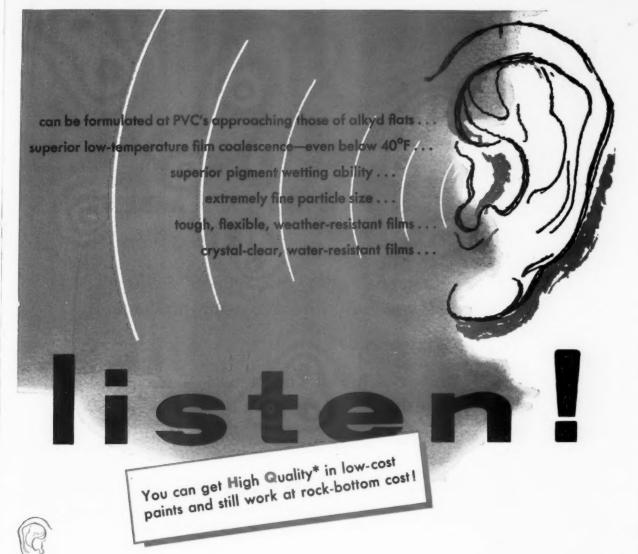
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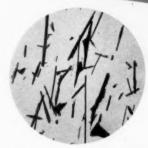
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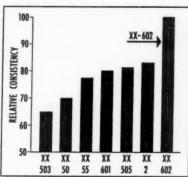
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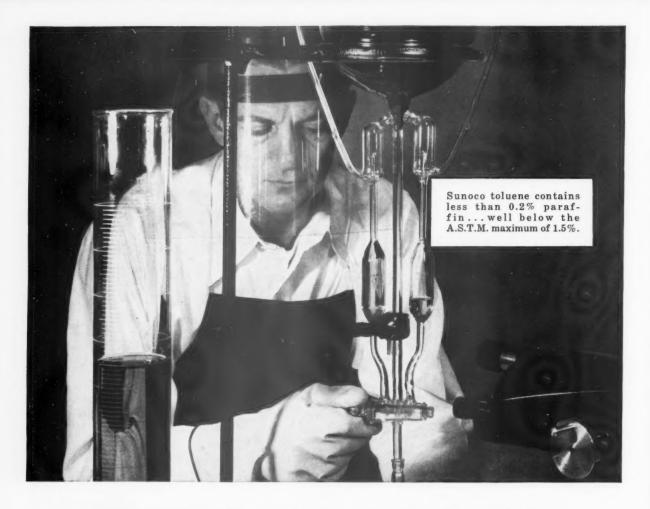
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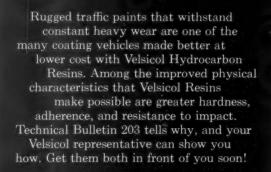
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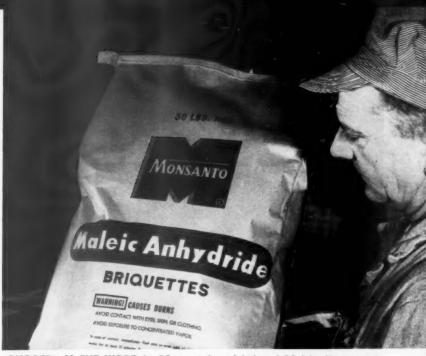
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# COLD HARDENING OF EPOXY COATINGS WITH AMINO COMPOUNDS\*

T is only in recent times that knowledge has been acquired on the reactions occurring with cold hardening processes. This applies to the technically very important hardening of epoxy resins with dicarbonyl acid anhydride (W. Fisch and W. Hofmann; Journ. Polymer Science, vol. 12, p. 497, 1954) also to the amine hardening process (L. Schechter, J. Wynstra and R. Kurkjy; Ind. Eng. Chem. vol. 48, No. 1, p. 94, 1956).

The addition reaction of a primary amine with the epoxide group, proceeds over a secondary to a tertiary amine group, as is diagrammatically shown in reactions (a) and (b).

$$X-NH_2+CH_2-CH-\longrightarrow X-NH-CH_2-CH-OH$$

$$X-NH-CH_2-CH-+CH_2-CH-\longrightarrow X-N-CH_2-CH$$

$$OH$$

$$OH$$

$$OH$$

This reaction can be transferred to resinous diepoxides as they are present in the epoxy resins. It follows that with the use of a primary diamine (ethylTHE EPOXY RESINS WHICH ARE BEING USED TODAY TO AN INCREASING EXTENT AS PAINT RAW MATERIALS OFFER CERTAIN INTERESTING POSSIBILITIES FOR CURING AT ROOM TEMPERATURE. FOR A NUMBER OF YEARS NOW, MANUFACTURERS OF INDUSTRIAL FINISHES HAVE MARKETED WHAT ARE TERMED COLD-HARDENED FINISHES BASED ON EPOXY RESINS. AMINO COMPOUNDS ARE USED IN THESE PREPARATIONS AS HARDENERS. THE PURPOSE OF THE PRESENT STUDY IS TO COMPARE THE COLD HARDENING SYSTEMS BASED ON EPOXY-AMINE COMBINATIONS WITH ONE ANOTHER.

ene diamine) a coupling of 4 di-epoxypolyether chains is possible, according to the following chemical structure:

With these polymerization reactions, up to now the discussion has been concerned only with primary or secondary amino groups. To a certain extent, the hardening mechanism can be explained further by addition reactions. It is however known that tertiary

<sup>\*</sup>Based on article, "Epoxy Resins Cold-Hardened with Various Amino Compounds" by G. H. Ott and H. Zumstein, Farbe und Lack, Vol. 62, No. 9.

amines also are capable of hardening epoxy resins (Eng. Patent No. 681, 099).

From various observations it can be concluded that in this case polymerization of the epoxy groups is initiated by tertiary amino groups which are present in catalytic amounts.

For example, addition products with tertiary amino groups can be formed from polyamines with several primary and secondary amino groups as a result of the reactions described above. It can be assumed that, in such cases, the hardening of the di-epoxy polyether follows by poly-addition and polymerization. Tests conducted for the clarification of such a polymerization are already available (E. S. Narracott: British Plastics, April 1953, p. 120 and L. Schechter and J. Wynstra: Ind. Eng. Chem. vol. 48, No. 1, p. 88, 1956).

In the finishing field, the special significance of the amine hardening lies precisely in the fact that it becomes feasible to cure the epoxy resins by this means, in the cold. The aliphatic polyamines of the general type:

for example, diethylene triamine or triethylenetetramine, have been found to be particularly suitable amino compounds.

The exact epoxide number of the resin as well as the knowledge of the number of mobile hydrogen atoms of the polyamine makes it possible to correctly proportion the amine addition. In the hardening process, if one considers only the addition of the amino groups to the ethylene oxide ring, then theoretically an active hydrogen atom would be calculated for each epoxy group.

For the case of a di-epoxy polyether with 1.67 mol. epoxide per 1 kg. of resin, hardened with triethylene tetramine, with the calculation of the amine addition theoretically necessary, the following considerations are fundamental:

Epoxide equivalent weight of the resin: 600 grms.

Number of active hydrogren atoms of the amine: 6

Molecular weight of the amine: 146

Hydrogen-active equivalent weight of the amine: 1/6 mol. = 24.35 grms.

Thus in this case, for 100 grms. resin, 4.06 grms. of triethylenetetramine, i.e. around 4 weight% of amine, are to be used. Experience has shown that the theoretical calculated amount does not necessarily lead unconditionally to the optimum characteristics of the final film. Also, with the use of the theoretically necessary amine amount, all the epoxide groups are never closed. On the other hand, non-reacted amino groups will noticeably influence the stability of the final film. In general it can be said that the stability to solvent mediums increases with rising amine addition and on the other hand against this, the stability to boiling water decreases (P. Bruin: Kunstoffe: vol. 45, No. 8, p. 335—1955).

It will accordingly be a question of choosing a certain amount of amine which will produce optimum film properties as far as possible.

According to the practical experience obtained by G. H. Ott and H. Zumstein, it is of advantage to work with about 15% excess of amine. Other technical workers have proposed 10-50% (J. J. Zonsfeld: Farbe und Lack; vol. 60, No. 10, p. 431—1954) and an excess of 70% (Am. Patent No. 2, 558, 115—Devoe-Raynolds Co. Inc.).

The operation with aliphatic polyamines as for example, diethylenetriamine or triethylenetetramine, shows various disadvantages. These are as follows. First, there is the relatively high toxicity of the free aliphatic polyamines. Secondly, there is an insufficient filming of the cold hardened coating on account of defective through-hardening (formation of very fine hairline cracks at bend points). Thirdly, there is the water-sensitivity of the epoxy-amine systems, particularly during the cold-hardening process under moist conditions (blush and bloom formation). Fourthly, there is a strong influencing of the film stabilities by small changes of the amine addition amounts. Fifthly, there is insufficient aging and weathering resistance of coatings which have been cold-hardened with amines.

The high reaction capacity of these compounds with the epoxy resins does not mean an unqualified complete acceptance of the aliphatic polyamines as hardeners, without something further. For this reason, research has been actively conducted in various quarters, to provide improvements of these materials for the purpose in view.

#### **Amine Adduct Hardeners**

With the formation of the soluble adducts from epoxide resin and polyamine, several advantages are obtained. The water sensitivity during the hardening under moist conditions as well as the unpleasant handling of relatively volatile amino-compounds, can be avoided. The epoxy resin is reacted with a large excess of polyamine, the non-reacted polyamine is distilled off and a still-soluble, solid adduct is obtained. This can be used with further amounts of epoxy resin for the production of cold-hardening coatings (Shell Technical Bulletin TB 115, June 1954, pp. 3-7; P. Bruin: Kunstoffe, vol. 45, No. 9, p. 383—1955).

An adduct can however, also be produced *in situ*, by reacting the epoxy resin with the amine in the ratio of a molecule of polyamine per epoxy group, without the adduct being isolated.

A very promising possibility is presented by the hardening of epoxy resins with polyamides (condensation products of aliphatic polyamines with dimerized vegetable fatty acids). The mixture ratio of the two resins can be varied over a wide range. With this naturally, the coatings formed also receive varying characteristics. (English Patent No. 726, 570; Ind. Eng. Chem. vol. 46, No. 10, p. 2, 226—1954).

Recently aliphatic polyamines have been developed which only produce tertiary amino groups and which are suitable as hardeners for epoxy resins (Belgian Patent No. 540, 444—Ciba Aktiengesellschaft). As a result they are more favorable physiologically and are less sensitive to moisture.

A short time ago also, a cold-hardening ethoxylene finish resin has been placed on the market, as a two component product. The hardening component contains a modified, resin-like polyamine (Araldite—a registered mark of the Ciba Aktiengesellschaft). This product also shows the above-mentioned disadvantages either not at all or to a much smaller extent.

Details are given in the following laboratory tests which were made with some of the above-mentioned materials. The comparison of the test results obtained gives indications regarding the limitation in application of the individual products.

#### **Laboratory Tests**

The following cold-hardening systems were used for the investigation, which were processed in the 17 test finishes listed in Table 1:

- Ethoxylene resin + aliphatic polyamine (Diethylenetriamine).
- Ethoxylene resin + aliphatic polyamine with only tertiary amino groups (fully alkylised di-ethylenetriamine).
- Ethoxylene resin + polyamide (Versamid 115 of General Mills Inc.).
   For comparison:
- Epikote 1001 + Amine-Adduct (Shell Technical Bulletin TB 115, June 1954, pp. 3 and 7).
- Araldite—Lacquer Resin 820—AB (Ciba Aktiengesellschaft).

With all the finishes produced from these systems, it was a question of clear finish throughout. The purpose of the investigations was to obtain conclusions on the differences between these systems regarding hardening rapidity (speed), through-hardening, moisture sensitivity during the hardening and aging resistance.

For this purpose the following testing and measuring methods were employed.

Hardening Speed. The hardening was conducted at  $20^{\circ}$  -  $22^{\circ}$  C. and 60% relative humidity. Firstly, the time was ascertained after which the coating had become dust-dry. This test was conducted by the Sanderson method (Gardener and Sward—Physical and Chemical Examination of Paints, 10th. edition, p. 150). Further, sheets of plate glass were covered with coatings of a constant film thickness ( $25 \pm 2$  microns) by means of a lacquer film pouring triangle and the film hardnesses were then measured at various periods of time by means of a Persoz pendulum hardness tester (W. Toeldte: Farbe und Lack, vol. 56, p. 97—1950).

Through-Hardening. A typical phenomenon of epoxy resin clear films cold-hardened with amines (not recognizable with pigmented films) is the formation of very fine hairline cracks at sharply bent places of

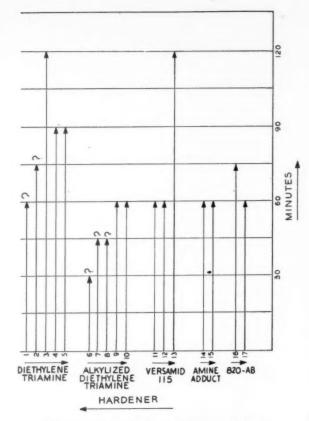


Figure 1. Dust-dry time of Finishes 1-17 at  $20^{\circ}\text{--}22^{\circ}\text{C}$ . and 60% R. H. by Sanderson method.

the coated sheet. These hairline cracks, which give a characteristic sheen to the film at the bend places, must serve to be an indication of defective through-hardening of the system. For the testing of the through-hardening, strips of soft aluminium sheet of 0.3 mm. thickness were coated. After drying for 7 days at room temperature, the coated test strips were bent round a 3 mm. rod.

As resistance of the films towards boiling water and solvent medium represents a yardstick for the appraisal of the through-hardening of the film, further tests were undertaken. A second series of coated soft aluminium strips, after 7 days hardening at room temperature were exposed for 3 hours to boiling water. A further third test series was immersed for 3 hours at 20° C. in di-isobutyl ketone. After this, both the two last test series were judged visually and the results compared with the sharp-bend tests over a small diameter rod.

Moisture—Sensitivity on Hardening. Glass plates coated with a  $25\pm2$  micron thick clear film were periodically visually judged, after storing at 20 -  $22^{\circ}$ C. and 95% relative humidity.

Aging Resistance. After a 24 hour storage at room temperature, coated strips of aluminium sheet were stored for 120 hours at 150° C. and then periodically

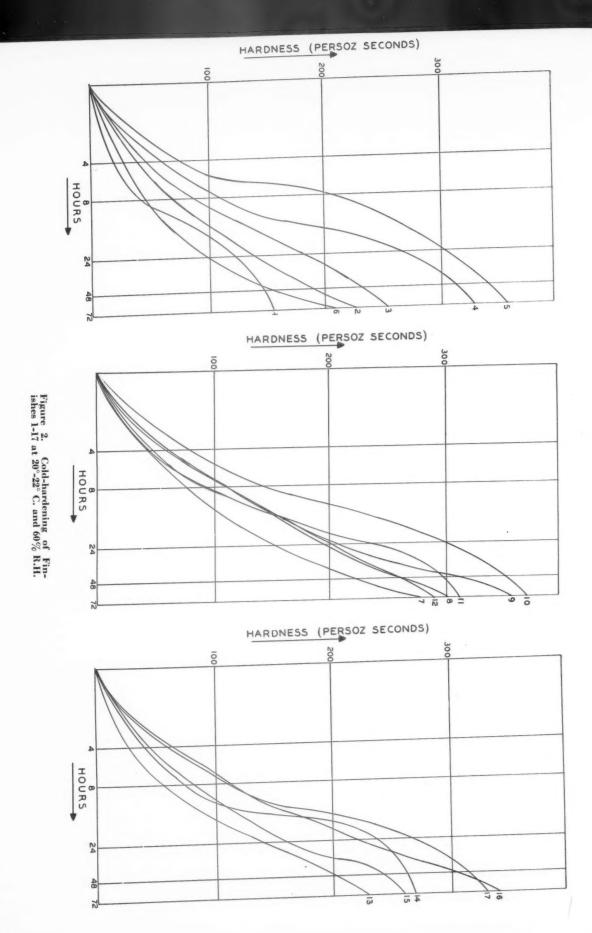


Table 1 Composition of the Test Lacquers 1 - 17

No.	Hardener Substance	Amine/Epoxide Ratio	Weight % of Hardener calculated on Amount of Ethoxylene Resin	Bend Test over a 3 mm rod after 7 days. Hardening at 20 - 22°C. and 60% Relative Humidity			
1.	Diethylenetriamine	22*	1	Cracked			
2.	Diethylenetriamine	44*	2	Cracked			
3.	Diethylenetriamine	70*	3.2	Cracked			
4.	Diethylenetriamine	100*	4.6	Cracked			
5.	Diethylenetriamine	150*	6.8	Cracked			
6.	Alkylized Diethylenetriamine	about 10**	1	Cracked			
7.	Alkylized Diethylenetriamine	about 20**	2	Cracked			
8.	Alkylized Diethylenetriamine	about 30**	3.2	Cracked			
9.	Alkylized Diethylenetriamine	about 45**	4.6	Cracked			
10.	Alkylized Diethylenetriamine	about 70**	6.8	Cracked			
11.	Versamid 115	_	50	Cracked			
12.	Versamid 115	_	66	Crack-free			
13.	Versamid 115	-	100	Crack-free			
14.	Amine-Adduct (Shell).	-	50	Crack-free			
15.	Amine-Adduct (Shell).	_	100	Cracked			
16.	Araldite 820 - AB	_	50	Crack-free			
17.	Araldite 820 - AB	_	66	Crack-free			

\* Number of active H - atoms on 100 epoxy groups

\*\* Number of tertiary amino-groups on 100 epoxy groups

subjected to the Erichsen test (Gardner and Sward: Physical and Chemical Examination of Paints, 10th Edition, p. 172).

Starting from the known fact (P. Bruin: Kunstoffe, vol. 45, No. 8, p. 335 (1955), that the solvent resistance of epoxy resin films, which have been cold-hardened with amines, increases with rising amine addition and on the other hand, the water-resistance becomes worse, the additions of free and alkyl polyamine respectively were varied over a wide range in order to obtain some idea of the influence of the hardening medium.

The "dust-dry" times ascertained by the Sanderson method are shown diagrammatically in fig. 1. From this diagram it will be seen that the drying of the finish proceeds more rapidly if the alkylized product is used as a hardener instead of diethylenetriamine.

With epoxy-polyamide and epoxy-ammine adduct systems as well as with Araldite resin 820—AB, the drying proceeds approximately at the same rapidity. The finishes 1, 2, 6 and 7 contain apparently too little hardener, so that the short "dust-dry" times observed can quite well be ascribed rather to a pure physical drying by evaporation of the solvent medium than to initial polymerization.

The development of the film hardness in relation to the time during the first three days of the hardening at room temperature, is shown graphically in fig. 2. In fig. 3, there is given a survey of the film hardnesses after 24 hours hardening at room temperature. Even when the values of the finishes 1, 2, 6 and 7 are ignored, it can be seen from the diagrams how great is the influence of small changes in the addition of free and alkylized polyamine on the development of the film hardness.

The systems hardened with free or alkylized polyamine show in the beginning, i.e. during the first 8 hours, somewhat higher film hardnesses than do the

Table 2

Solvent Medium and Water Resistance of the Coatings 1 - 17 after 7 days cold-hardening at 20-22°C. and 60% relative air humidity.

Hardener	Lacquer No.	Des	troyed	Att	acked	Eas Ha	y loss of ardness	In Order		
		Water*	Di-isobutyl- ketone**	Water	Di-isobutyl- ketone	Water	Di-isobutyl- ketone	Water	Di-isobutyl- ketone	
	1	×			×					
	2	×			×					
Di-ethylenetriamine	3	×					×			
	4	×							×	
	5	×							×	
	6	×	×							
Alkylized	7	×			×					
Di-ethylenetriamine	8	×							×	
	9	×							×	
	10	×							×	
	11					×			×	
Versamid 115	12					×	×			
	13	×							×	
	14			×			×			
Amine Adduct	15	×					×			
020 4.0	16					×			×	
820 - AB	17					X			×	

\* 3 hours immersion in boiling water.

\*\* 3 hours immersion in di-isobutyl ketone at 20°C.

other systems. For testing the through-hardening of the films, coated aluminium sheets were subjected to the sharp bend test over a small diameter rod after 7 days hardening at room temperature.

The results obtained are assembled in Table 1 and were compared with the behavior of the same films towards boiling water and di-isobutyl ketone at 20° C. (Table 2). The tests served to confirm the already observed fact that epoxy resin films, which have been polymerized with free (or also alkylized) aliphatic polyamines at room temperature, are not sufficiently hardened-out and accordingly, always show the characteristic hairline cracks with the sharp-bend test over a small diameter rod. A confirmation of the defective through-hardening is also to be obtained with the boiling water test as well as, although natur-

ally somewhat less clearcut, with the testing of the film resistance towards di-isobutyl ketone (Table 2).

The results of the resistance testing show further, that with the test finishes 1, 2, as well as 6 and 7, the amount of hardener applied was too small, because both the resistance towards boiling water as also the behavior towards di-isobutyl ketone, was poor. This finding can also be taken from fig. 1.

For the ascertainment of the moisture sensitivity, during the hardening, coated glass plates were stored at 20 - 22° C. and with a 95% relative humidity. The plates were visually judged periodically over a period of 72 hours. The results of this test are assembled in Table 3.

It follows from these results that the high moisture-

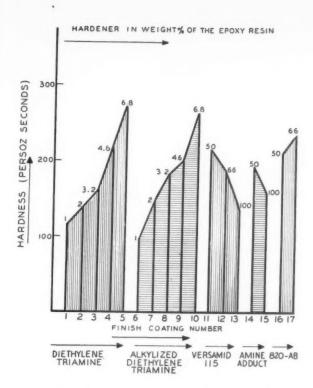


Figure 3. Hardness values of Finishes 1-17 after 24 hours at  $20^{\circ}$ - $22^{\circ}$  C. and 60% R.H.

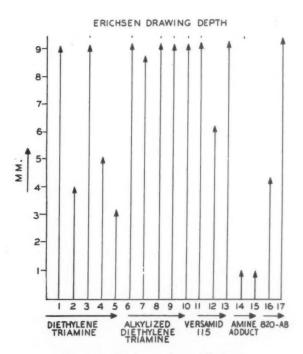


Figure 4. Erichsen values of Finishes 1-17 after 3 days ageing at 150° C.

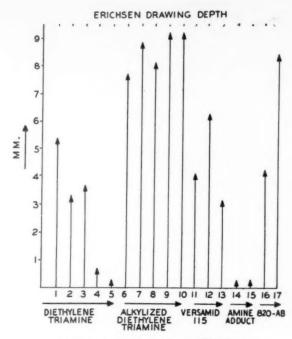


Figure 5. Erichsen values of Finishes 1-17 after 5 days ageing at 150° C.

sensitivity of free aliphatic polyamines can be reduced to a considerable extent by complete alkylization of the primary amino groups of the polyamines (Belgian

Patent No. 540, 444—Ciba Aktiengesellschaft) as well as by the use of amine-epoxy resin adducts. Also, the use of resin-like polyamines leads to the same object (Araldite lacquer resin 820—AB).

Some indications were given in a previous publication, of the poor aging resistance of cold-hardened epoxy resin-amine systems (G. H. Ott; Comparitive Physical Investigations of Ethoxylene Resins on aging—FATIPEC Congress Book 1953, Amsterdam, p. 36). Endeavors were made to obtain some conclusions on the aging at increased temperature of films of this type, by an accelerated testing.

Coated aluminium strips were hardened for 24 hours at room temperature and after this, were stored for 5 days at 150° C. By periodic measurement of the elongation and of the adhesion, with the Erichsen apparatus, the aging behaviors of the films were observed-figs. 4 and 5. Here also, from the results obtained there can be observed the bad aging characteristics of the finish films hardened with diethylene The films hardened with a di-ethylene triamine adduct (American Patent No. 2, 643,239) behave somewhat more badly still. The coatings hardened with alkylized polyamine show good temperature-aging resistance as well as Araldite finish resin 820-AB (3 A : 2 B). The values of the epoxy Versamide 115 systems proved surprising, as it would have been suspected that they were more temperature resistant.

Coating	2 hours	4 hours	8 hours	24 hours	72 hours
1.	Strong clouding	Strong clouding	Hazed	Clear	Clear
2.	Strong clouding	Strong clouding	Hazed	Hazed	Hazed
3.	Strong clouding				
4.	Strong clouding				
5.	Strong clouding				
6.	Strong clouding	Clear	Clear	Clear	Clear
7.	Strong clouding	Clear	Clear	Clear	Clear
8.	Clouding	Clear	Clear	Clear	Clear
9.	Clouding	Clear	Clear	Clear	Clear
10.	Clear	Clear	Clear	Clear	Clear
11.	Clouding	Clear	Clear	Hazed	Clear
12.	Strong clouding	Hazed	Hazed	Hazed	Hazed
13.	Strong cleuding	Strong clouding	Strong clouding	Clouding	Hazed
14.	Strong clouding	Clouding	Clouding	Hazed	Clear
15.	Strong clouding	Strong clouding	Clouding	Hazed	Clear
16.	Clear	Clear	Clear	Clear	Clear
17.	Strong clouding	Hazed	Hazed	Hazed	Clear

Table 3

Moisture Sensitivity of the Finish Coatings 1 - 17 during the first 72 hours of the hardening Process at 20-22°C. and 95% Relative Air Humidity.

#### Survey of the Test Results

A complete judgement of the five cold-hardening epoxy resin finish systems tested is not possible on the basis of the test results obtained. Nevertheless, some valuable conclusions can be drawn for the applicability of the individual amine-hardener groups:

(a) Epoxy resin finishes hardened with free aliphatic polyamines first have the disadvantage of unpleasant handling. In addition, they have the drawback of an insufficient through-hardening and high moisture-sensitivity, bad heat resistance and insufficient aging resistance.

(b) The complete alkylation of such polyamines reduces the toxicity, reduces the moisture sensitivity with the hardening and increases the heat resistance. The through-hardening is however scarcely better than with the free polyamines.

(c) The adduct formation from free aliphatic polyamines and ethoxylene resin for use as hard-

ener, reduces the moisture sensitivity on hardening, improves the through-hardening, reduces however further the heat resistance, which is already insufficient.

(d) By the use of polyamide resins of polyamines and dimerized fatty acids as the hardening components, there is achieved—optimum mixture ratio of the components provided—approximately the same improvements as with the adduct formation and in addition, somewhat better heat resistances.

(e) Araldite lacquer resin 820—AB, with all the test ranges considered here, i.e. moisture sensitivity during the hardening, bend strength, surface hardness, heat resistance, water and solvent medium resistance (gave good average values, which should serve to ensure for this product many fields of application as a cold-hardening filming agent).

# LATEX PAINTS AS

# ARCHITECTURAL FINISHES

The architect is undoubtedly confronted by many new names and products over the last 8 years, the result of some amazing progress in the paint and chemical industries. Such names as polystyrene, vinyl, styrene butadiene, vinyl acetate, acrylic, rubberized, latex, emulsion are certainly confusing. The word latex covers most of the above vehicles, and is becoming more and more accepted as a means of describing an emulsion or water dispersion of a synthetic resin.

Efforts to determine a satisfactory architectural latex paint will best be accomplished by close cooperation with reputable paint manufacturers. Most manufacturers of latex paints now have available AIA specifications for their paints, backed by six to eight years of practical experience.

At the present time every major paint company is manufacturing a latex or emulsion paint based on styrene butadiene, acrylic latex or polyvinyl acetate emulsion. The 1954 Census of Manufacturers indicates that 29,400,000 gals, of stvrene butadiene paints and 3,139,000 of vinyl and acrylic water based paints were produced. Because of a combination of low cost and desirable properties, latex paints made from styrene butadiene still are overwhelmingly accepted for interior application. This same census indicates that slightly more latex paint was produced than flat oil and alkyd solvent thinned paints.

Why and how have latex paints

Text of a paper presented by Rudolph W. Kugler,
consisting representative of the Dow Chemical Co.,
before the March meeting of the Metropolitan New
York Chapter of the Construction Specifications Institute, Inc., 115 E. 40th St., New York 16, N.Y.

proved to be second only to T.V. as the fastest growing sales product over the past 10 years. A craze may come and go, but certainly not last 8 years. Latex paints have been accepted so widely because of their inherent advantages over the other paint products available during this period. Advantages such as water thinned vs. solvent thinned, easy cleanup, ease of application, dirt and stain removal. fast drying, early recoating, low non-offensive odor and excellent alkali resistance have aided considerably in the tremendous growth of latex paints.

These advantages can be translated directly into savings for an institution or home owner. Hotels and hospitals are extremely satisfied with one or two paint applications in the morning followed by occupancy that afternoon or evening without the presence of an offensive odor.

The painter can apply a latex paint faster, more easily, paint out holidays and skips without lap marks showing and apply the second coat within an hour or two after the first coat. The contractor benefits directly from these savings of time and effort and in all probability passes part of this saving along to his client.

Latex paints are ideal for roller application, and even greater savings in time and labor may be realized.

It is important to realize that a latex paint which permits recoating within 15 minutes will also result in difficult removal of splattered paint. It is also possible the fast-drying latex paint may set up on the brush or roller resulting in very difficult cleaning and application. A compromise on drying time is necessary to permit recoating in about 1 to 2 hours under good drying conditions and allow easy cleanup.

The use of latex paint for exterior application is growing rapidly, primarily in the south with the north following more slowly. Many of the advantages found with interior experiences have motivated its progress outside. All latex paints have excellent alkali resistance and are recommended for cement and cinder block clay, tile and brick, asbestos siding and shingles, concrete and stucco. Most paint manufacturers have definite suggestions on the type and preparation of surface.

Some recent figures indicate that the polyvinyl acetates have the greater share of the exterior market followed by the styrene butadiene and acrylic types. In the case of exterior paints, the reliability of the paint manufacturer and his history of experiences with his particular recommended paint are most important

Exterior latex paints should not be applied on primed or bare wood. An oil-type conditioner should be utilized wherever cement paints or heavily chalking surfaces are encountered. Although most latex paints will offer excellent performance on exterior masonry surfaces, certain types should be checked carefully for efflorescence, water spotting, mildew resistance and chalk masking. In some cases the formulation may be a factor, others the vehicle may be at fault.

A latex is a myriad of extremely (Turn to page 109)



The author continues his random reflections on various aspects of the paint industry. The opinions expressed in this column are his alone and do not necessarily reflect those of this publication.

#### Color Is King

NOW that April's here, June will soon be bustin' out all over. Bustin' out—in color, of course. For that's the time of year when, indoors and out, the brighter hues dominate the scene.

Indoors, gaily colored slipcovers and newly redecorated walls liven the view. And outdoors, the riot of color in our gardens is enhanced, more likely than not, by freshly repainted home exteriors with pert contrasting trim.

In summer, in short, color is king. There's at least one area, however, where this does not apply. The paint industry. Here color knows no season. For if it be true that color sells paint, then it's probably safe to say that for us color is king the year around. The Meaning of Color

Color means different things to different people. In "Protective and Decorative Coatings," a book prepared by a staff of specialists under the editorship of the late Joseph J. Mattiello and issued some years ago by the Office of the Quartermaster General, G. L. Erik-



Phil Heiberger

son lists some of the various meanings:

"(1) The chemist considers color as pigment and dye, or as atoms and molecules combined in different ways.

"(2) The physicist considers color as light or as radiant energy of various wave lengths and intensities.

"(3) The optician and biologist consider color as a visual phenomenon or the result of

projecting images through the lenses of the eyes and causing very complicated photochemical and physical reactions in the eye, optic nerve, and brain.

"(4) The psychologist considers color as a sensation of the mind and studies the various reactions produced by color when used in different ways.

"(5) The printer and advertising man perhaps consider color as a 'headache' and indeed it may be a 'headache' when it is improperly used in printing and advertising.

"(6) The dictionary (Webster's *Collegiate*) defines color as 'a property of visible phenomena distinct from form and from light and shade, depending on the effect of light of different wave lengths on the retina,' etc.

"In simpler form color is a 'visual sensation different from the sensation of form or shape and different from the sensation of light or shade.'"

The Why of Nature's Colors

Color abounds in nature and nature has its own special uses for it—mainly propagation and survival. In browsing through a fascinating book entitled, "Sex and the Nature of Things," by N. J. Berrill, a Professor of Zoology at McGill University, I learned a little about the meaning of color to a zoologist, also a few facts about the prevalence of color vision among our fellow living creatures, and I gained a conception of the importance of color in the animal-vegetable relationship.

Cross-pollination or cross-fertilization is the rule for the majority of flowering plants and they depend, for the most part, upon insects and birds to accomplish this for them. Flowers are colored primarily, says Dr. Berrill, because insects and birds exist that see color and are attracted by it.

Each pollen carrier has its color preferences. There are bee flowers, moth flowers, fly flowers, beetle flowers, bird flowers, and bat flowers.

Bees are attracted by showy, brightly colored petals, mostly blue or yellow or combinations of them, because bees see a color range from yellow into the ultraviolet and are color blind to red. Bee flowers, therefore, include violets, verbena, some orchids, blue columbine, larkspur, and many others.

Since most moths fly during dusk or night, moth flowers run mainly to shades of white. Bats, too, go out at night and see poorly. Their flowers are large and mostly white. Butterflies, on the other hand, fly by day, and since a butterfly sees color well into the red, butterfly flowers tend to red and orange.

Birds have powerful vision toward the red but not the blue, and their flowers are red and yellow red columbine, fuchsia, passion flower, hibiscus, etc.

There is little doubt, Dr. Berrill states, that most fishes see color and so do most of the reptiles, although snakes seem to be without color vision.

Mammals Colorless and Color Blind

Yet, strangely, color blindness seems to be general among most mammals. Horses, cattle, dogs, cats, raccoons, mink, rats, mice, and rabbits, for example, are all color blind. The only mammals who see and appreciate color are the anthropoids—humans, monkeys, apes.

Looking over the various categories of the animal kingdom, it seems to be the rule that those gifted with color vision (birds and butterflies, for example) are also endowed with brilliant built-in colors, while those deprived of color vision (most mammallian groups) are generally dull and drab of color.

Man is one of the exceptions that proves the rule. Not especially colorful himself (except for a handful of redheads), he nevertheless possesses great sensitivity to color and apparently has a strong yearning for color on his person and in his surroundings.

Man's Unique Ability

Fortunately, this yen for color is matched by an unique ability to compensate artificially for what he lacks naturally. And compensate he does—often with a vengeance—by decorating himself (or rather, in our culture, herself) with cosmetics, his clothing with varicolored fabrics, and his home, inside and out, with paint.

Nor does he stop there. The latest trend is to repaint traditionally drab and unsightly industrial installations, such as oil refineries, in gay, cheerful, pleasing colors. The happy result has been not only improved community relations and reduced tank evaporation loss (due to heat-reflectance of light-colored paints), but a startling increase in efficiency of installation work crews.

Such colorful repainting projects are practical these days, industrial painters say, because of the chalking and self-cleaning properties of recently developed finishes. Here it's the paint that sells the color rather than the color that sells the paint.

In any case, it's just another example of man, that ingenious animal, successfully thwarting the carefully devised plans of his best friend and fiercest enemy, old Mother Nature herself.

#### Disappearing Bounderies

Time was when organic chemistry was organic chemistry and inorganic was inorganic. Academicians seemed to have decreed that "never the 'twain shall meet." This rigid concept of chemistry is

now old hat.

More and more, chemists are studying the borderline areas of organic and inorganic and they are finding ways of uniting the two in order to create a new family of compounds popularly known as "organo-metallics."

"Organo-metallics" will soon have an even more profound influence on the future of the paint industry. One well-known group, the silicones, has examples in which the silicon-carbon linkages are bound solely by primary chemical forces.

In another type, the coordination compounds, the organic portion of the molecule is stabilized by metal ions by means of both primary and secondary valence forces. A well known paint ingredient of this class is the phthalocyanine blue pigment.

In some cases, even polymerization can be brought about by the actual coordination with the metallic ion. In others, a monomeric unit is built, metal with organic material around it, and then these units are polymerized. So far, only low molecular weights have been obtained. The organic part of the molecule gives the elasticity whereas the inorganic portion influences the stability.

While we rejoice at the departure of stifling artificially rigid chemical classification boundaries, we mourn an accompanying and related loss, that of simplicity in paint formulations. Whether we like it or not, coatings are destined to become more and more complex. Every cloud has its silver lining and every silver lining has its cloud.

#### Research Currents

IN commenting in this space last month on the book "Currents in Biochemical Research 1956," I omitted mentioning the stated object of the book. It is, in the succinct words of its editor, "to communicate to non-specialists an over-all impression of the present status of the significant problems in each field, to point up the broad strategy of current research." The contributors, moreover, were requested to write "as simply and as lucidly as the requirements of scholarship tend to permit."

Couldn't we make good use of a book of this type with the accent on protective coatings?

# PRODUCTION TIPS

#### Temperature Control Maintains Mixing Temperatures in Ball Mills within ± 5 Degrees

TEMPERATURE control is most important in steel ball mills and in large roller type mills. In the steel ball mill, small balls, usually 5/8 inch in diameter, tumble against the mill's metal surface. Heat generated during mixing is dissipated by venting and by a water cooled jacket.

The roller mill uses small metal rollers rotating against a large metal roller to crush and grind the ingredients. Although many roller mills are open, heat generated within the main roller is frequently dissipated by a water cooled jacket.

Pebble mills, a third type, use concrete balls rotating inside a brick-lined vessel. Very little heat is generated, and no cooling is required.

Since materials are left to mix in ball mills from 24 to 48 hours, heat must be minimized to prevent breakdown of the various materials.

Where a mill is being used for a single process, and where the temperature control point remains the same, an effective solution is the use of a self-operating reverse-action Power No. 11 Regulator. (Figure 1).

In use, the valve is mounted in the cold water line supplying the water jacket. The thermal bulb containing a volatile liquid is installed within the line leaving the jacket. No electrical or air connections are necessary.

A temperature change at the bulb varies the pressure of the volatile liquid in the bulb. Pressure is transmitted through flexible tubing to a bellows which operates the valve in a gradual manner. This regulates the flow of cold water into the jacket necessary to hold the process under control at a constant temperature.

In some cases, a ball mill may be used for different ingredients at different temperatures. To meet these varying requirements, a combination of an adjustable air-or-water-operated reverse acting Powers Accritem Regulator with a Powers diaphragm valve is called for. (Figure 2).

The thermal element of the regulator is mounted within the water line leaving the jacket. With a rise in temperature at the element, the regulator decreases the air or water pressure to the spring-opened valve on the supply line. When the temperature drops, pressure is increased to close the valve.

The regulator has an adjustable dial which can readily be set for the process temperature desired.

Further detailed information is available from the Powers Regulator Company, 3434 Oakton St., Skokie, III.

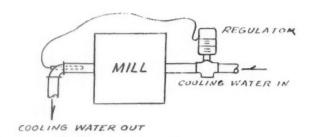


Figure 1. Regulator System

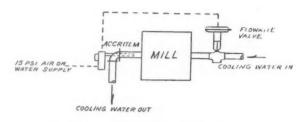


Figure 2. Accritem Regulator System

# PIGMENT COLORS FOR PAINT

By George Wormald\*

### Part II --- Oranges and Yellows

#### **ORANGES**

#### **Chrome Oranges**

Chrome oranges differ chemically from chrome yellows in that they are *basic* lead chromates. The depth of shade increases with the basicity, the oranges becoming weaker and redder in tint and poorer in light fastness. Thus, the chrome oranges range in shade from the near medium yellow to the extra deep orange.

There is little doubt that chrome oranges will continue in volume usage for many years; however, there are several paint properties in which they are deficient. Chrome oranges, particularly the darker shades, are low in hiding, are poor in gloss and gloss retention and in suspension properties, tend to flood and are color-sensitive to overgrinding. These deficiencies can be avoided by blending medium chrome yellow and molybdate orange (of the improved light fast varieties) to closely approximate the color of any of the chrome oranges. Compared to chrome oranges, such blends show superior color retention on short term exposure and are essentially equal on long term outdoor exposure; at equal hiding, these blends are lower in cost.

Being basic in character, the chrome oranges are fairly resistant to alkali but have poor resistance to acid; also, they tend to be reactive in acid vehicles. Like all lead containing pigments, they should not be used in nontoxic finishes (e.g., toy enamels). Simi-

Only in recent years have there been any new developments in yellow and orange pigments for use in paint. Prior to these developments, selection was more or less restricted to either the inorganics (i.e., lead and zinc chromate, iron oxide, and cadmium pigments) or azo pigment dyestuffs (i.e., Hansa and benzidine). The new pigment developments have been made in the organic group. One of these, "Green-Gold"\*, a nickel-azo complex has excellent light fastness in masstone and tint. Still more recently, light fast yellow and orange pigments have been developed in the vat dye group; these are, for the most part, anthraquinone deriva-tives or chemical relatives of indanthrone blue.

The important advantages and disadvantages of oranges and yellows for use in paint are summarized in Tables I and II respectively.

\*U. S. Patent 2,396,327

larly, because of their lead content, they should not be used in finishes which may be exposed to sulfides.

#### Molybdate Orange

Molybdate orange (1) is a coprecipitated mixed crystal of lead chromate, lead sulfate and lead molybdate. The high chroma and tinting strength of molybdate oranges are unique among inorganic pigments; in these tinctorial properties, they approach many organic pigments. Accordingly, one major application is in blending with organic red pigments to produce relatively low cost, high intensity red finishes having good hiding power and light fastness.

Molybdate oranges are made primarily in two shades; namely, those with a light yellow masstone and strong yellow tint, and those with a darker redder masstone and weaker redder tint. Both shades are now made with equally good light fastness. The dark red shade is used primarily in masstone blends with organic red pigments, while the light yellow shade is used as a self orange and in titanium dioxide extended blends alone and in blends with light fast red pigments.

As previously discussed in the section on chrome oranges, molyb-date orange, of the improved light fastness type, is finding a new field of application in blends with medium chrome yellow as chrome orange substitutes.

On the basis of improved light fastness, gloss and gloss retention, color brilliance and hiding power of light fast molybdate orange over that of dark chrome orange in the International Orange shade, U. S. Government Specification, MIL-L-7178 lacquer: Cellulose Nitrate, Gloss, for aircraft Use, has been amended to specify the use of the light stable molybdate orange. Similarly, TT-E-489b Enamel; Gloss, Synthetic (for Exterior and Interior Surfaces) is being amended to specify the use of light fast molybdate orange for color 1205A International Orange.

Molybdate orange should not be used in non-toxic finishes or those requiring good alkali and/or soap fastness or fume (sulfide) resistance.

<sup>\*</sup>Pigments Department, E. I. DuPont de Nemours & Co.

#### Cadmium Orange

Like cadmium yellow and cadmium red, cadmium orange is available in both the C. P. and cadmium lithopone types. Like the red, cadmium orange is a cadmium sulfo selenide. The paint properties of the orange are essentially equal to those of the yellow but with somewhat better tint color retention.

Recently a new line of cadmium pigments has been introduced in which mercury has replaced selenium, i.e., the redness is controlled by increasing the HgS content rather than the cadmium selenide.

#### Benzidine Orange

Benzidine orange (also known as pyrazolone orange) is a disazo pigment dyestuff prepared by coupling diazotized dichlorbenzidine with two molecules of phenyl methyl pyrazolone. In general, its paint properties are quite similar to those of benzidine yellow. The light fastness of benzidine orange is not adequate for exterior exposure. About its only application in paints would be in lead-free finishes for interior use (e.g., toy enamels).

#### Dinitraniline Orange

Dinitraniline orange is a mono azo pigment dyestuff prepared by coupling diazotized dinitro aniline to beta naphthol. It bleeds in organic solvents and has fair heat resistance. Its light fastness in masstone is good; its use is recommended in Federal Specification TT-E-489a, color 1205B, International Orange air dry. The good chemical resistance, freedom from toxic metals and high color intensity of dinitroaniline justify its use over the less expensive chrome and molybdate oranges in some specialized finishes.

#### Vat Dye Oranges

In this group are to be found the most recent orange pigment developments. Research effort on these expensive pigments has been justified by current demands for durable light fast pastel colors in both house paints and automotive finishes. For the most part, these vat dye pigments, including Orange RK, are anthraquinone derivatives in which the colored pigment is extended with as much as 60% alumina hydrate. These are very

Pigment Benzidine Orange

Dinitraniline Orange

Orange RK

Molybdate Orange

Chrome Orange (CI-1279)

High color intensity. High tinting strength. Free of toxic metals. Good chemical resistance. Soft texture.

**ORANGES** 

High color intensity. High tinting strength. Free of toxic metals. Good chemi-cal resistance. Good masstone light fastness. texture.

Excellent light fastness, even in pastels & metallics. Free of toxic metals. Excellent chemical resistance. High transparency for metallized polychromatic fin-ishes. Excellent bake resistance.

High hiding. Low cost. Non-bleeding. Good light fastness. Excellent outdoor durability. Good bake resistance. Easy grinding. Blends well with reds.

Low cost. Non-bleeding. Good bake resistance. Good light fastness.

Disadvantages

High cost. Poor light fastness. Poor bleed resistance. Low hiding power.

Poor tinting light fastness. Poor bleed resistance. Low hiding.

High cost. Moderate color intensity. Fair bleed resistance.

Contains lead. Discolors in presence of sulfides. Darkens in masstone on exposure. Poor alkali and soap fastness in pastels.

Contains lead. Discolors in presence of sulfides. Darkens in masstone on exposure. Poor alkali and soap resistance in pastels. Sensitive to overgrinding. Poor gloss reten-

Table I. Advantages and disadvantages of various orange pigments.

light fast colors even in light pastel shades. Their relatively high alumina hydrate content may result in reactivity problems, particularly in high acid vehicle tinting bases. With the exception of bleed resistance, the general paint properties of these pigments are similar to those of indanthrone blue.

#### YELLOWS

#### Yellow Iron Oxide

Precipitated yellow iron oxide is actually a hydrated iron oxide; accordingly, its color stability to high bake temperatures is poor and is limited to baking temperatures of 220° F. or less. Like the red iron oxides, the yellows are low in cost, high in hiding, non-bleeding and have excellent light fastness. Major considerations which limit their broader use in paints include low chroma, low tinting strength, and poor gloss and gloss retention.

Special forms of highly transparent iron oxidest are made for use in durable metallized polychromatic finishes. These products are more brown than yellow; however, when used in metallized finishes, they impart a golden color. This type of iron oxide

tends to be more reactive than the opaque vellows.

#### Lead Chrome Yellows

Chrome yellows are the largest volume yellows used by the paint industry. These pigments, based on lead chromate and mixtures of lead chromate with lead sulfate and occasionally lead carbonate or phosphate, are available in a wide range of hues, going from the deep reddish yellow, known as medium yellow, to the light greenish yellows, known as lemon or primrose yellows. The color and strength of these pigments is controlled in their manufacture in three important ways:

a) through variation of chemical composition, chiefly through a variation in lead chromate/lead sulfate ratio. As the sulfate content increases, the vellow becomes lighter.

b) through control of crystal configuration, i.e., geometry of its molecular structure. The chrome yellows fall into two crystallographic systems, 1) the stable monoclinic and 2) the metastable orthorhombic form. The medium and light yellows exist in the monoclinic form, whereas the so-called primrose

<sup>†</sup>Marketed under the names "Midas-Gold" and "Refined-Gold"

and lemon types are generally found in the ortho rhombic form, or generally in a mixture of the two forms, the rhombic predominating.

c) through control of particle size, the smaller the particle the stronger the pigment (up to certain limits approaching a half wave length of light in magnitude).

All of the chrome yellows darken on exposure (3, 4) both in masstone and tint. Generally speaking, the medium chrome yellows and the light yellows are more light fast than the primrose and the lemon yellows. In fact, the light fastness of the primrose and lemon (phosphated) yellow types is so poor that they are used relatively little in paint manufacture. The chrome yellows, while fairly acid resistant are not alkali resistant, and accordingly are not recommended where alkali conditions are encountered. They are opaque pigments, bright in color, and have good gloss retention. They blend well with certain reds to give oranges, and with certain blues to give greens.

A special variety of the type used in the manufacture of chrome greens is now available for blending with blues to produce greens. This "shading" yellow so-called, although somewhat "dirty" in color as a yellow, blends with iron blues and phthalocyanines to give bright attractive greens. Using iron blues, most of the standard chrome greens can be matched at an economic advantage.

For the production of lead-free paints for children's toys, etc., chrome yellows are avoided. For this usage, formulators frequently turn to the organic yellows, the Hansas or toluidine yellows and the benzidines.

#### Zinc Chromate Yellows

Two zinc chromate yellow pigments are available: 1) the ordinary zinc yellow (2) with an empirical composition approximating 4 ZnO • 4CrO<sub>3</sub> • K<sub>2</sub>O • 3H<sub>2</sub>O and 2) the basic zinc chromate approximating the composition 4.5 ZnO • CrO<sub>3</sub> • 4H<sub>2</sub>O. Both these pigments are widely used in metal protective finishes. In fact, the latter, basic zinc chromate, is used almost exclusively in the

Pigment Yellow Iron Oxide

Lead Chromate Yellow

(CI:1270)\*

Advantages
Low cost. High hiding.
Non-bleeding Excellent
light fastness. Good chemical resistance. Free of toxic
metals.

YELLOWS

Low cost. High hiding. Non-bleeding. Good light fastness in pastels. Excellent outdoor durability. Good bake resistance. Soft texture.

Zinc yellow Low cost.
(CI:1271) Metal protective.

Basic Zinc Chromate Specific use in metal protective wash primer.

Cadmium Yellow
(CI:1272)

High hiding. Non-bleeding. Excellent light fastness—deep shades. Excellent bake resistance.

Hansa Yellow
(R, G and 10G)
(Sch:84)\*\*
(Pr:105 - 10G)

High color intensity.
High tinting strength. Free of toxic metals. Excellent light fastness deep shades.
Good lightfastness in pastels. Soft texture. Good chemical resistance.

Benzidine Yellow
(AA & OT)
(Pr:518)

High tinting strength. Free of toxic metals. Good masstone light fastness. Soft texture.
Good chemical resistance.
Excellent bake resistance.
Good bleed resistance.

Green-Gold
(U.S. Patent 2,396,327)

(U.S. Patent 2,396,327)

Excellent light fastness in masstone and tint. High color intensity in tints and green blends. High transparency in metallics. Good bleed resistance. Good bake resistance.

\*Colour Index—Soc. of Dyers & Colourists (1924)
\*\*Sch: Farbstofftabellen von Gustav Schultz (1931)
\*\*\*Prototype—Amer. Assoc. of Textile Colorists & Chemists, Vol. 31 (1955).

Table II. Advantages and disadvantages of various yellow pigments.

so-called "Wash Primer" covered by U. S. Military Specification MIL-P-15328. The regular zinc yellow is used both as a color, chiefly for making light shade greens in combination with phthalocyanine blue or green, and for metal protective primers, both steel and aluminum. The typical ferrous metal primer using zinc yellow is illustrated by U. S. Federal Specification TT-P-57, while the important primer for aluminum is illustrated by the aircraft specification U.S. MIL-P-6889a and U. S. MIL-P-8585.

For colored finishes, zinc yellow as a yellow is not particularly light fast and is somewhat deficient in gloss retention. Nevertheless, it serves admirably in the formulation of light fast light greens based Disadvantages
Low in chroma. Low in tinting strength. Poor gloss retention. Fair suspension characteristics. Fair bake resistance.

Contains toxic metal. Discolors in presence of sulfides. Darkens in masstone on exposure. Poor alkali & soap fastness. Tends to be reactive in highly acid vehicles.

Low tinting strength. Poor light fastness as a yellow. Poor alkali resistance.

No color value.

Low tinting strength. Low color intensity. Poor gloss retention. Fair weathering characteristics. Poor tint light fastness. Sensitive to discoloration due to metal sulfides. Relatively high cost.

High cost. High oil absorption. Poor bleed resistance. Low hiding power.

High cost. Low hiding power. High oil absorption.

High cost. May be demetallized at pH extremes. Green tone limits application.

on combinations of phthalocyanine blue or green with chalk resistant rutile titanium dioxide. In yellow finishes, it is poor in alkali resistance, but good in acid resistance.

Slight bleed.

#### Cadmium Yellows

For certain special uses, cadmium lithopone yellow finds a This pigment is a calcined place. co-precipitated mixture of cadmium sulfide/barium sulfate. Shade variations are brought about in the manufacture (5) by including zinc to obtain the lighter shades and selenium to obtain the redder This pigment, although shades. excellent in heat resistance, is poor in duarbility and very acid sensitive. These deficiencies, combined with its relatively high price, limit its usefulness.

#### Hansa Yellows

Hansa Yellow G, also known as toluidine yellow, is a monoazo pigment dyestuff. It is excellent in masstone light fastness but shows a tendency toward fading as the pigment is reduced with prime white. Unfortunately, the pigment is relatively transparent, and is difficult to use in masstone where good hiding requirements are to be met. It has good acid and alkali resistance, but is lacking in resistance to heat. It shows a strong bleed in practically all paint systems. Hansa yellows are made in a variety of shades ranging from the reddest Hansa R through Hansa G and 5G to the greenest or primrose shade called Hansa 10G. The Hansa G shade is by far the most commonly used. Two major uses for toluidine yellow are in emulsion paints and in leadfree enamels.

#### Benzidine Yellows

Benzidine yellows are disazo pigment dyestuffs. They are approximately twice as strong, much more bleed and heat resistant and markedly inferior in light fastness versus Hansa Yellow. Two forms

of benzidine yellow are made in quantity 1) the transparent aceto acetanilide (AAA) type and 2) the more opaque ortho toluidide (OT) type. Of the two types, the orthotoluidide type is the more light

Two additional forms are made; these are the ortho anisidide (OA) and meta xylidide (MX) types. They are more expensive, more transparent, have better heat stability and are better in tint light fastness than the AAA or OT types. The tint light fastness of the MX type lies between the OT type and Hansa Yellow G.

The benzidine vellows are high in oil absorption and, therefore, difficult to disperse in ball mill equipment. They are, however, soft in texture and can be dispersed satisfactorily by roller milling. Their primary application in paints is for the interior lead-free chemical resistant finishes.

#### "Green-Gold"\*

In formulating yellow paints, the paint technologist is confronted with the fact that no one yellow pigment comes near having all the requirements for high grade \*U. S. Patent 2,396,327

finishes. Only one yellow pigment, namely, "Green-Gold" approaches the combination of properties that is desired, i.e., excellent light fastness in masstone and tint, fume resistance, bake resistance, high chroma and good transparency for metallized polychromatic finishes. The major limitation of this pigment is its greenish hue. When reduced with white, it produces an extremely light fast but greenish vellow tone; in masstone, the pigment is green.

The chemical resistance of finishes pigmented with "Green-Gold" is good; however, being a metal chelate, its stability to pH extremes is somewhat lower than that of a true salt. Accordingly, demetallization of the pigment can occur in some lacquers when aged in the wet state. If demetalization does occur, the color will become stronger, redder, poor in bleed resistance and very fugitive to light.

REFERENCES

(1) Huckle, W. G. and Lalor, E., Ind. Eng. Chem., 47, No. 8, p. 1501-6 (1955)

(2) Spengeman, W. F. and Dawson, D. H., Paint, Oil & Chem. Review, Oct. 1945

(3) Fisk, N. R., Paint Tech. 19, 221-4 (1955)

(4) Watson, V. and Clay, H. F., The Light Fastness of Lead Chrome Pigments, J. Oil Color Chem. Assoc., 38, 167-77 (1955)

(5) Curtis, P. J. and Wright, R. B., J. Oil Color Chem. Assoc., 37, 26-43 (1954)

			Light Fastness		Out- door Dura- bility		Index	Index	Power	Properties	rties	(approx.)	Bleed Resistance				Chemical Resistance	
			Dark shade	Pastel	Dark Shade	Pastel	Rel. Tint. Str.	Rel. Cost Index at equal streng	Rel. Hiding F	Grinding Pro	Baking properties	Spec. Grav. (	Alcohol	Linseed oil	Aliphatic	Aromatic	Acid	Alkali
Lead	Chroma	te Med. Yellow	f-g	vg	g	g	100	1.6	h	e	g	5.4	e	e	e	e	g	р
6.6	4.6	Light Yellow	f	vg	g	g	285	4.5	h	е	g	5.4	e	e	e	e	g	p
44	4.4	Primrose Yellow	p	g	f	f	_	6.4	m	е	g	5.7	e	e	e	e	g	P
Lead (	Chroma	te Orange Light	g	g	g	g	190	3.0	h	**	g	6.9	e	e	e	e	f	f
66	44	Orange Med.	g	g	g	g	_	3.8	m	**	g	7.0	e	ė	е	e	f	f
44	4.4	Orange Dk.	g	g	g	g	N-10000F	5.6	m	**	g	7.1	е	e	e	e	f	f
Molyb	date O	range	g	vg	g	g	55	1.2	h	е	g	5.5	e	е	e	e	f	f
Zinc Y	ellow		f-p	f	g	g	800	10.0	1	g	g	3.5	e	e	e	e	e	p
Basic	Zinc Ch	romate	(1	ised in			mer)		1	g	-	3.8	e	e	e	e	e	p
Cadmi	ium Yel	low (lithopone)	e	vg	р	f	350	20.0	h	е	e	4.4	e	e	e	e	p	e
Yellow	Iron C	Oxide (ppt.)	e	e	p	g	200	1	h	e	e	4.0	e	e	e	e	e	e
Hansa	Hansa Yellow		e	vg	e	f	50	5.0	1	e	f	1.4	e	e	sl	sl	e	g
Benzid	Benzidine Yellow		vg	p	g	p	35	4.0	1	e	e	1.5	sl	e	e	sl	e	g
Dinitra	Dinitraniline Orange		g	f	g	p	36	2.4	1	e	f	1.6	vp	vp	vp	vp	e	g
"Green	"Green-Gold"*		e	e	e	e	25	20.5	1	e	g	1.6	f	e	e	g	g	g
Benzid	Benzidine Orange		g	p	g	p	33	5.5	1	e	g	1.4	f	p	p	f	g	g
Orange RK Lake		e	e	e	e	160	100.0	1	e	e	2.0	g	e	e	p	e	e	

\*U.S. Pat. 2,396,327; \*\*sensitive to overgrinding.

Legend: e=excellent; f=fair; g=good; h=high; l=low; m=medium; p=poor.

Table III. Property comparison values of orange and yellow pigments.

# Now...give your polyvinyl acetate and latex base paints

# 6 to 9 months longer shelf life



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Raw edge on OUTSIDE of can. The Outward Curl in the Tripletite ring still has an edge of raw metal. But this raw edge is now outside the can. There is no chance of exposed steel touching your polyvinyl acetate or latex base paints.



Eastern Division: 100 E. 42nd St., New York 17 Central Division: 135 So. La Salle St., Chicago 3 Pacific Division: Russ Building, San Francisco 4



Manufacturers of quality papers specify Du Pont Ti-Purring tilanium dioxide pigment to add brightness and opacity . . . just as makers of quality printing inks specify Du Pont Pigment Colors for fine reproduction. Reprints of this illustration, suitable for framing, are available on request from your Du Pont Pigments salesman.

Du Pont Pigments add beauty...practicality...versatility

# The brilliance of a butterfly captured in durable, lightfast colors for your paints

In paints as in nature, color appeal is important. But you also require durability and lightfastness for your paints. Du Pont offers a wide range of versatile, lightfast pigment colors designed to keep your paints looking better—longer.

Does your line include oil-base house paints for exterior use? If so, you have a choice of pigments especially suited for the manufacture of these paints. Du Pont Green-Gold YT-562-D, for example, has outstanding color retention and is highly resistant to chemical fade.

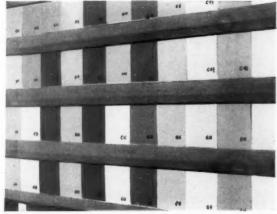
"Ramapo" Green GP-755-D, "Ramapo" Blue FR BP-366-D and Medium Chrome Yellow Y-469-D also show outstanding performance under severe outdoor conditions. Parachlor Red RT-427-D is ideal for producing the bright solid reds for your house-paint line.

Your Du Pont Pigments representative is ready to help. Remember... as a leading manufacturer of pigments for paints, Du Pont has a background of experience unmatched in the field. E. I. du Pont de Nemours & Co. (Inc.), Pigments Department, Wilmington, Delaware.

These high-quality Du Pont Pigments are illustrative of many in the Du Pont line which will give you the colors and properties you require.

Green-Gold—
Durable Organic Yellow
Monastral® Blues and Greens
"Ramapo" Blues and Greens
Molybdate Oranges
Chrome Yellows

Parachlor Red Shading Yellow Zinc Yellow Toluidine Reds Ti-Pure® Titanium Dioxide



At the Du Pont Pigments Test Farms, histories on many paints (including stucco, cement and shingle paints) are being compiled on the paint formulations you will be making tomorrow.



Data from the test fences are supported by tests conducted on houses in many sections of the country. The paint used on this house contained Du Pont Green-Gold YT-562-D and exhibited excellent resistance to fade.



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#### Cabot Carbon to Build Illinois "Cab-O-Sil" Plant

Plans for construction of a plant to produce Cab-O-Sil, a silicon oxide pigment, have been announced by Cabot Carbon Co., subsidiary of Godfrey L. Cabot, Inc., Boston, Mass.

Construction of the plant, to be located on a 75-acre tract at Tuscola, Ill., will begin as soon as weather permits. The tract adjoins the plant sites of the U. S. Industrial Chemical Co. and the National Petro-Chemical Corp., about four miles west of Tuscola.

One neighboring firm will provide raw materials used in the production of Cab-O-Sil, while the other will purchase a by product of the Cab-O-Sil process. Hydrogen for the operations of the new plant will be supplied by U. S. Industrial Chemical, and hydrochloric acid will be furnished to National Petro-Chemical.

Natural gas available in the vicinity will be used for process heating. In addition to hydrogen, silicon carbide and chlorine are used in the production of Cab-O-Sil.

The product has been produced exclusively for Cabot by Degussa of Germany, but increased demands have necessitated the construction of another plant. The American plant will have a capacity of 100 carloads per year, and will be designed to permit the manufacture of other metallic oxides, with minor changes.

Edward J. Holland, Jr., a member of the Cabot organization for 12 years, will be manager of the new operations. Most of Mr. Holland's experience has been in the firm's White Pigment Division.

The plant will employ approximately 50 people when completed.

#### AP&CC Adds to Lab

American Potash & Chemical Corp. doubled the size of its Whittier (Calif.) Research Laboratory with a \$200,000 addition recently.

The new structure will accomodate the research staff, which has more than doubled since 1953.



DAVISON MEETS DISTRIBUTORS: Gathered around the conference table are executives and staff members of the Davison Chemical Company Division of W. R. Grace & Co. and distributors, who discussed research, production, new or unusual uses, and sales of the company's line of Syloids.

#### Addresses Rubber Symposium

Philip C. Servais, manager of the Silastic section of the Product Engineering Laboratories of Dow Corning Corp., was a featured speaker at the International Synthetic Rubber Symposium held in London late last month.







Myron Kin

Mr. Servais attended the symposium while on tour of Dow Corning customers in England, Germany, Italy and France. He was accompanied on the trip by Myron Kin, manager of the Resin section of the laboratories, and Ira W. Hutchison, manager of the firm's International Department.

One of 12 rubber scientists invited to speak at the meeting, Mr. Servais discussed "Silicone Rubber-Its Growth and Recent Developments." Dr. Ivor H. Riley, manager of Silastic development for Dow Corning's British associate firm, Midland Silicones, Ltd., was co-author of the paper.

#### Los Angeles Club Meets

More than 150 members and guests attended the February meeting of the Los Angeles Paint and Varnish Production Club at Scully's Restaurant.

A suggestion was made by Mr. Joe Bland of University High School, for interesting young people in the paint industry. He proposed that students of science and mathematics be hired to work in the industry during their summer vacations in order that they may be acquainted with paint production and other aspects of the industry.

Mr. John Close of the Harshaw Chemical Co. was the featured speaker. He addressed the meeting on "Dispersed Colors," and reviewed the constituents of water dispersed colors as well as the advantages of presscake colors, as compared to dry pigments for water dispersion.

Mr. Close described procedures used for evaluation of color pigment dispersions for use in emulsion paints. He exhibited panels to substantiate the advantages of presscake water dispersed colors, as compared to dry dispersed colors in emulsion paints.

In other business, announcement was made of the forwarding of the following suggestions to the Federation of Paint and Varnish Production Clubs for changing of the organization's name: Surface Coatings Society, International Coatings Society, Society of Surface Coatings Industries, and Institute of Surface Coating Chemists and Engineers.

#### **New Tamms Warehouse**

Tamms Industries, Inc., reacted to a serious fire in its Chicago warehouse at 8124 South Hoyne Avenue in January by stocking and placing into operation a new warehouse within a week.

The new unit is at 2035 West 58th Street.

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#### Zinc Institute Meeting Set

The American Zinc Institute, Inc., will hold its 39th Annual Meeting April 25-26 at the Drake Hotel, Chicago, it has been announced by John L. Kimberley, executive vice president.

The morning meeting of April 25 will be held in conjunction with the Lead Industries Assoc. and the Galvanizers Committee. It will include reports on the current lead and zinc markets and a presentation of the current world supply and consumption picture for both metals.

Mr. Kimberley said that the afternoon would be devoted to panel discussions on the future of zinc. Members of the paint industry are to be included on the panels.

Zinc industry research and a course of action for the zinc industry based on panel recommendations of the previous day will be the topics for April 26.

#### Wrinkle Finish Agreement

An agreement has been concluded between Alkydol Laboratories, Inc., of Cicero, Ill., and New Wrinkle, Inc., of Dayton, Ohio, by which Alkydol will take over the manufacture and sales of all wrinkle vehicles for the Dayton concern.

Alkydol also has announced that it will make available wrinkles in its own line.

#### Goodyear Offices Relocate

Two Goodyear Tire and Rubber Co. Chemical Division field offices, in Boston and Cleveland, have begun operations in new locations.

The new Boston office is located at 66 B St., Needham Heights 94, Mass. The district manager is John Hussey, and field representatives are Hal Allick and Joe Donahue.

The Cleveland office is now in Goodyear's distribution center at 18901 Five Points Rd., Brook Park, Ohio. Roy Wallace is district manager, and Paul Koons, Rex Draman and Ray McCurdy are field representatives.



NATION'S CLEANEST TOWN: Judges of the 1956 National Cleanest Town Contest with the winning entry of Nashville, Tenn., and the championship trophy. Left to right, William S. Kilborne, representing the Secretary of Commerce, James F. Steiner, U. S. Chamber of Commerce, and D. Otis Beasley, representing the Secretary of the Interior, selected Nashville for the Ernest T. Trigg Grand National Award from among 38 winning cities in the contest sponsored by the National Clean Up-Paint Up-Fix Up Bureau.

#### Schroeder to Lecture

Arthur J. Schroeder, director of pigment division production, The Hilton-Davis Chemical Co., will lecture on flushed color pigments at North Dakota State College on July 29.

The talk will be part of a series on paint technology being conducted by the college at its Seventh Advance Paint Refresher Course. The course is part of the Extension Division designed to acquaint students and people in industry with the latest theoretical concepts and technological advances.

Mr. Schroeder holds a number of patents on processes he has developed in the flush color field. He will discuss the history of flushing, its techniques, differences in processing flushed and dry colors, and the advantages of flushed colors in terms of quality and economy.

He will also describe the practical applications of flushing for industrial purposes.

#### Tall Oil Plant in Operation

Hercules Powder Co. has announced the beginning of operations at its tall oil fractionation plant at Savannah, Ga.

Now operating at rated capacity, the plant manufactures resins, purified fatty acids and related products from crude tall oil. Initial operations began at the first of the year for the plant, in conjunction with Hercules' Paper Makers Chemical Department.

The Savannah plant is the second tall oil facility to be built by Hercules in the past two years. The plant at Franklin, Va., opened last year.

John M. Eagan, plant manager, said the plant processes tall oil obtained under long-term agreements from a group of southern kraft paper mills.

#### Reactor for Union Carbide

AMF Atomics, Inc., has been awarded a contract to design and build a nuclear research reactor for Union Carbide and Carbon Corp.

The reactor will be the heart of a nuclear research center to be constructed in Sterling Forest, N.Y., approximately 40 miles from New York City. The center will become the focal point for nuclear research activity within Union Carbide.

In addition to the five megawatt pool-type reactor, the center will include a radioactive materials laboratory, an ores and engineering laboratory, and a building for allied research operations and administrative functions.

The Union Carbide reactor contract is the tenth awarded to AMF Atomics, a subsidiary of American Machine & Foundry Co.

**Terrestation (Section and Section (Section 2)** 

#### New England Club Hears Tompkins Talk on PVAc

Norman G. Tompkins, manager of Customer Applications Research



Almy Chemical
Co., Division of
W. R. Grace and
Co., spoke on
"Polyvinyl Acetate Applications
in the United
States and Germany" at the

for the Dewey and

Tompkins many" at the February meeting of the New England Paint & Varnish Production Club.

Sixty-two members and guests were present at the Hotel Commander in Cambridge, Mass.

Polyvinyl acetate, said Mr. Tompkins, is a member of the vinyl family of synthetic resins whose members are contributing a great deal to the comfort, convenience and safety of our daily lives without receiving due credit in the popular mind.

He said polyvinyl acetate is among the least costly of the thermoplastic type resins and exhibits exceptional adhesive and binding properties, as well as fastness to light, which helps to explain its wide use in the paint, adhesives and textile industries.

In his presentation Mr. Tompkins traced briefly the development of the versatile synthetic resin from its beginning in Germany more than 40 years ago. He said that while its use in paint has been well developed both here and in Germany, its uses in other fields have been exploited in one country and almost neglected in the other.

Mr. Tompkins talked on waterbase paint application, showing the basic differences existing between the U. S. paint industry and that of Germany. The sale of paint by weight rather than by volume, and the key position occupied by the skilled professional painter, who usually mixes his own paint even when of the polyvinyl acetate type, were two of the ways mentioned by Mr. Tompkins in which German practices differed from our own.

Trends evident today are tending to erase the differences, but the change may not be complete for many years, he said.

New applications for polyvinyl acetate and for its new modifications, including copolymers and tripolymers, are being developed rapidly, according to Mr. Tompkins, and volume used in present applications is still increasing. Tremendous future growth is indicated, he stated.

#### **Metalsalts Names Agents**

Metalsalts Corp. has announced the appointment of three agents to handle META-SAN, all purpose bactericide-fungicide for use in organic coatings.

The Philip E. Calo Co. of Chicago and Minneapolis will represent the firm throughout Minnesota, North and South Dakota, Wisconsin, northern Indiana and Illinois and western Iowa.

A. J. Lynch & Co. of Los Angeles and San Francisco will handle the product in California, Arizona and Nevada.

Wyrough & Loser of Trenton, N. J., and Waltham, Mass., will be the representative for New England, New York State, with the exception of Buffalo, New Jersey, Delaware, Maryland, District of Columbia, Virginia, North and South Carolina and eastern Pennsylvania.

#### Sapolin Moves Headquarters

The executive and sales offices of Sapolin Paints, Inc., have been moved to the Bartholomew Bldg., 205 East 42nd St., New York, N.Y., after more than 50 years at 229 East 42nd St.

The offices will occupy the entire 11th floor. The C. A. Woolsey Paint & Color Co., Inc., marine paint subsidiary of Sapolin, will also move its headquarters to the new address.

The move to larger quarters was attributed by E. A. Eckart, Sapolin president, to increases in sales and personnel during recent years.

#### Two Volumes Added to Series

Volumes five and six have been added to the series on Heterocyclic Compounds, edited by Robert C. Elderfield, professor of Chemistry at the University of Michigan, and published by John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

The fifth volume includes eight chapters dealing with five-membered heterocycles containing two hetero atoms and their benzo derivatives. The 744-page volume sells for \$20.

Volume six contains fourteen papers covering various aspects of two hetero atoms and their benzo derivatives. The volume contains 753 pages and sells for \$25.

A total of 22 specialists comprise the authorship of both volumes.



STUDY LATEX PAINTS: Emulsion paint experts examine pigment dispersion in latex film on sample panel at the University of Florida's recent Short Course in Paint Technology. Left to right are Dr. H. F. Payne, University of Florida; Felix Liberti, National Starch Products; Fred Quigley, Dow Chemical Co., and Gerould Allyn, Rohm and Haas Co.

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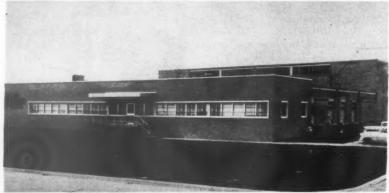
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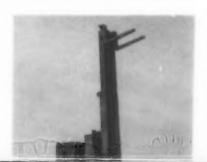
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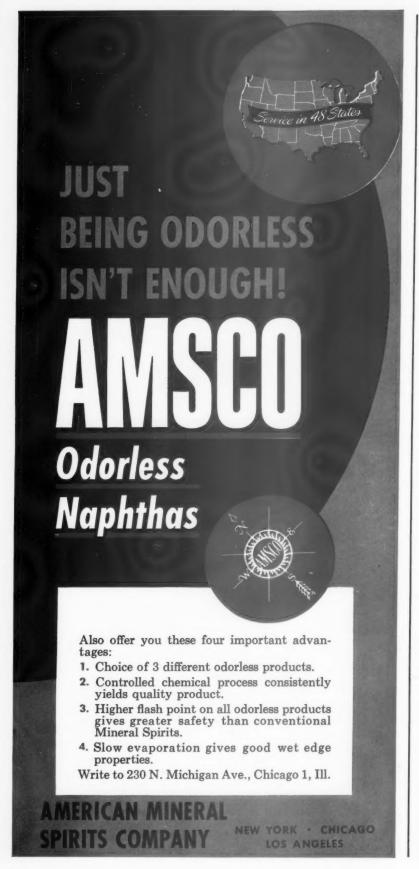
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Other meetings since October, 1956, covered "Evolution of Coatings," "Coating Trends" and "The Coated Fabrics Industry."

#### Fred H. Eberman, Sr., 71

Fred H. Eberman, Sr., retired Archer-Daniels-Midland executive, died of a heart attack February 19, in Cleveland, Ohio. He was 71 years old.

Mr. Eberman concluded a 52year career in the paint industry last April, after serving since 1950 as regional sales manager for ADM's drying oils, paint vehicles, resins and vegetable fatty acids.

He became associated with ADM in 1929, when the firm acquired the Werner G. Smith Co. Earlier he had worked with the Ohio Varnish Co., Cleveland Paint and Color and Benjamin Moore Co.

Mr. Eberman helped establish the Cleveland chapter of the Federation of Paint, Varnish and Lacquer Production Clubs in 1922, and assisted in the organization of the Cleveland Paint Superintendents Club in 1914. He was a member of the Fifty Year Club of the National Paint, Varnish and Lacquer Assoc.



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LEWIS-SHEPARD

#### DUST-RESISTANT TRUCKS Complete Protection

Dust-resistant construction is now available on a complete line of electrically powered materials handling trucks, with protection against effects of metal, coal, coke, grain dust and carbon black.

Traction and pump motors totally enclosed and provided with wrap-around brush covers and cork neoprene gaskets to provide tight sealing. Starting and first speed resistors mounted in a tightly gasketed compartment, welded integrally with the main control compartment.

A 16-gauge sheet steel housing with a tight-fitting gasketed flanged cover encloses the main contactors and timing device. Conductors for the main power circuit are neoprene insulated, and provisions are made for protecting the battery compartment and connector.

Dust-resistant features available in riding-type and "walkie" trucks, both high-lift and low-lift models. Lewis-Shepard Products, Inc., Dept. PVP, 125 Walnut St., Watertown 72, Mass.

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H. L. PALMER

Drum warmers provide thermostatically controlled temperatures in two ranges, 100 to 450 degrees F. and 60 to 250 degrees F. Harold L. Palmer Co., Dept. PVP, 2980 W. Davison Ave., Detroit 38, Mich.

### LIQUID DEFOAMER For Water Based Paints

Liquid defoamer, Surfynol 104A, claimed by manufacturer to have shown excellent results in polyvinyl acetate, butadiene-styrene and acrylic paint formulations.

New material is added to pigments, preventing foaming during grinding. It can also be added during let-down to eliminate pinholing and foaming in brush or roller application.

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#### TEST PANELS In Eight Standard Sizes

Standardized steel and aluminum panels for testing and displaying paints and finishes are said to offer increased accuracy. Particular care taken to assure that the surface finish is uniform and free from flaws which might cause erroneous test results.

Clean and ready to use, panels are wrapped in VPI paper, sealed twenty-five to a polyethylene bag to prevent rust or contamination. Panels come in eight standard sizes, ranging from 3"x6" to 6"x 12", including all common panel sizes.

Panels are made from steel rolled to specifications typical of automotive and appliance grade sheet, and are flattened after fabrication to insure accuracy in testing and display. May be curved for display purposes.

The Q-Panel Co., Dept. PVP, 14122 Lorain Ave., Cleveland 11, Ohio.

#### Q-PANEL



### N E W MATERIALS — EQUIPMENT



COOLANT

### DRUM HANDLER Positive Locking Action

CeCOR Model 66 drum handler permits one man to handle drums weighing up to 1,000 pounds safely. Positive locking action claimed, which clamps chimes of all standard 30 and 55 gallon drums with up to 2,500 pounds pressure for accident-free upright transportation.

Operator rolls drum handler to drum, moves clamp handle to rear position and lifts load with hydraulic pump and ram in six seconds without changing position behind the handler. Load said to be always in balance.

Model 66 said to have plantwide application. Narrow turning radius makes it especially useful in crowded plant aisles, warehouse or loading dock.

Also available with Model 76 drum dispenser is hand-operated, one way 10 gpm pump for dispensing oil, coolants and solvents directly to machine tool.

Coolant Equipment Corp., Dept. PVP, Verona, Wis.

#### ALKYD COATING RESINS Thixotropic Features

Two new alkyd resins for use in architectural, marine and maintenance coatings are available commercially.

ZA-600 Anathix resin is characterized by outstanding thixotropic features. Anathix thixotropic resins reportedly can be used alone, or in combination with a long-oil

alkyd, to formulate efficient, durable enamels in flat, semi-gloss or gloss classifications.

Product is said to offer easier handling, wider compatibility, greater versatility, better brushability and superior weather-resistance than conventional thixotropic vehicles.

ZA-129 Glyptal alkyd resin solution is described as a premium quality long-oil alkyd. Said to provide excellent weather-durability, rapid air-dry time, low odor and outstanding gloss and gloss retention.

General Electric Co., Chemical Materials Dept., Dept. PVP, 1052 West Sixth St., Los Angeles 17, Calif.

### LEVEL CONTROLLER Explosion-Proof System

Recently developed combination pneumatic-electronic level controller is now available in explosion-proof model, for use in Class I, Group C and D and Class II, Group E, F and G hazardous locations.

Model is capacitance-actuated, and will convert the smallest change in level into proportional air output, according to company. Level controller has been used with granular solids as well as with liquids, with specially designed probes installed.

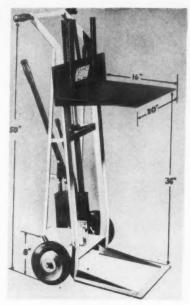
Called "Pneutronic," level controller systems come in two types of pneumatic action. Model 111 produces an increase in air output with an increase in measured level. Model 112 produces a decrease in air output with an increase in measured level.

Fielden Instrument Division, Robertshaw-Fulton Controls Co., Dept. PVP, 2920 North 4th St., Philadelphia 33, Pa.

#### PLATFORM LIFT TRUCK Has Hydraulic Pump and Ram

Grand portable platform lift truck now has added manually operated 4-speed hydraulic pump and ram, said to be able to raise 500 pound loads 54 inches from ground in 30 seconds.

Speed adjustment permits lighter loads to rise faster. Long pump handle lifts as much as 4½ inches per stroke with only 40 pounds pressure.



GRAND

Truck designed to do various lifting, moving and stacking jobs in shops and plants. Moves motors and dies into position, unloads trucks, and stacks heavy boxes and crates.

Safety features include heavyduty 20"x16" steel pallet, roller bearing eight-inch texite wheels, large foot rest for balancing loads and balance fork to prevent tipping.

Grand Specialties Co., Dept. PVP, 3101 W. Grand Ave., Chicago 22, Ill.

#### MANGANESE-BON PIGMENT Permanent Dark Red

Roman Red No. 1082 is now being offered as a moderately priced, permanent dark red. Manganese-BON pigment is said to have excellent to good exterior durability depending on color concentration.

Recommended for use in red enamels where it can be economically blended with Ming Oranges to make non-bleeding enamels with durability from one to two years with good odor and gloss.

Makes somewhat buttery inks, but said to be useful for tin printing, poster inks or where lightfast reds are required. Claimed to be excellent for vinyl polyester, polyethylene and some styrene applications.

Kentucky Color and Chemical Co., Inc., Dept. PVP, Louisville, Ky.

#### PERFORMANCE

Proof of Quality in McDANEL Industrial Ceramic Products

Performance is the best measure of ceramic quality, and users of McDanel Industrial Ceramic Products report unwavering uniformity, service, and quality, year after year.

Many McDanel products are applied to a number of important national research projects. They are subjected to mechanical shock, abrasion, chemical action, heat and cold.

The McDanel laboratory keeps McDanel ceramic developments well in advance of the demands of industry. Frequent field investigations enable us to anticipate future industrial ceramic requirements.

Our widely diversified ceramic products are presented in a number of bulletins. So that you may receive the information of interest to you, we suggest that you . . .

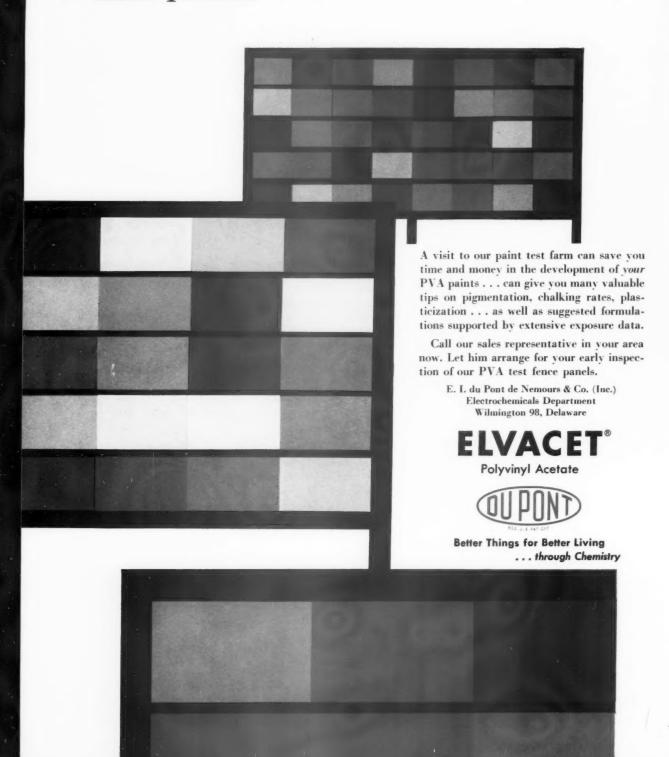
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Celanese now offers you a choice of three vinyl monomers for the development of better emulsion paints, adhesives, coatings, finishes, laminates, plastics and synthetic rubbers.

Celanese Vinyl Acetate, a truly versatile chemical, is the starting point in the development of a variety of end products, such as adhesives, textile sizes, protective coatings, sheets, film and extrusion molding compounds.

Celanese Vinyl Propionate copolymers offer promising applications in the fields of adhesives, emulsion paints, plastics, synthetic rubbers, protective coatings and finishes, chewing gum resins.

Celanese Methyl Isopropenyl Ketone, a new vinyl monomer, forms tough plastics in homopolymerization, and copolymerizes with many commercially available vinyls for use in plastics, films, elastomers and adhesives.

With the expansion of the Celanese development program to include Acrylic Acid Esters, Celanese will soon be in a position to offer you a broader range of monomers for your product development programs. Meanwhile, data accumulated by Celanese Research on Ācrylic Ācid Esters can be made available to you for use as the groundwork in your plans for the future. Also available from Celanese to help you in your planning are technical data sheets on Vinyl Acetate, Vinyl Propionate and Methyl Isopropenyl Ketone, specially prepared for your use by the Celanese Chemical Division.

Write: Celanese Corporation of America, Chemical Division, Dept. 558-D, 180 Madison Avenue, New York 16, N. Y. Celanese®

	VINYL ACETATE	VINYL PROPIONATE	METHYL ISOPROPENYL KETONE
	Descriptive Data	Descriptive Data	Descriptive Date
Distillation Range @ 760 mm, °C	71.8-73.0	within 1° (in- cluding 94.9)	98 (true boiling point of pure product)
Color APHA, max.	5	10	water-white
Water, % wt., max.	0.15	0.15	1.5
Specific Gravity @ 20°/20°C	0.9330-0.9340	0.9170-9180	0.8555-0.8565
Acidity as acetic acid, % wt., max.	0.02	0.1	_



## "Mildew-Resistant"

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ON YOUR LABEL

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For cleaner, brighter, longer-lasting finishes be sure your paints are mildew-resistant

The words "Mildew-Resistant" on your label mean protection to the paint film, good reputation of the painter or dealer, and satisfaction to the consumer. And for mildew-resistance—you can find no more effective additives than the Nuodex Fungicides.

Super Ad-It® is the leader of this line of mercurials, metallo-organics, and organics. For water-based paints, PMA-15 prevents bacterial spoilage in the container and mildew attack on the applied paint. Also available are Nuodex PMO-10 and Fungitrol Alpha.

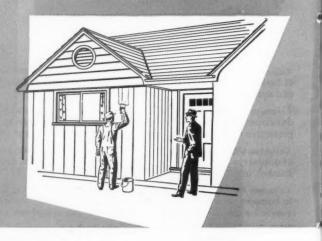
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ADDITIVES AND S/P CHEMICALS

TO HELP MAKE GOOD PAINTS BETTER

DRIERS—FUNGICIDES—MIXING AND MILLING AIDS—ANTI-SKINNING AGENTS—LOSS OF DRY INHIBITORS—BODYING AGENTS—STEARATES

ADMINISTRATION OF THE PROPERTY OF THE PROPERTY

#### Paint Sets Sales Record

Sales in the paint industry for 1956 were 1.1 per cent greater than in 1955, the previous all-time high.

General Joseph F. Battley, president of the National Paint, Varnish and Lacquer Assoc., announced that 1956 sales totaled \$1,580,460,000, according to the Bureau of the Census, U. S. Department of Commerce.

December, 1956, sales, however, were 6.6 per cent lower than those of the same month in 1955. December, 1956, sales totaled \$97,-308.000.

December, 1956, trade sales were \$51,663,000, 7.6 per cent below those of the same month the year before. Annual trade sales, however, were \$935,898,000, a 2.4 per cent increase over the 1955 record.

Industrial sales for December, 1956, were down 5.4 per cent from those of December of the previous year, recording \$45,645,000. Industrial sales for 1956 were the only category to fall behind 1955's record, showing a total of \$644,562,000, a decrease of .8 per cent.

President Battley commented that paint sales gains were recorded in a year that was characterized by nationwide inclement spring weather seriously affecting trade sales, and in a year when automobile production declined, having a marked effect upon industrial sales.

#### Plan Vinyl Chloride Plant

Plans for the construction of a plant to produce 50 million pounds of vinyl chloride monomer annually have been announced by Diamond Alkali Co., Cleveland, Ohio.

A. L. Geisinger, vice president and general manager of the Plastics Division, announced that the new facility is to be located at Diamond's Deer Park Plant, Houston, Tex. It will be designed and engineered by Scientific Design Co. of New York, and built by Brown & Root, Inc., of Houston.

Completion of the plant is scheduled for early next year.

#### Southwestern Convention Announces Schedule

Announcement has been made of the schedule for the Southwestern Paint Convention to be held April 26-27 at the Shamrock Hilton Hotel, Houston, Texas.

The convention is sponsored by the Houston and Dallas Paint and Varnish Production Clubs, and includes an exhibit of raw materials, which will take place in the Shamrock Hilton Hall of Exhibits, 2-10 P.M., April 26.

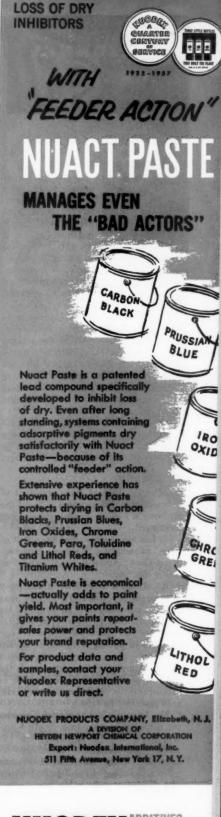
The convention schedule for April 27 follows:

#### MORNING SESSION

- 9:00 Wilmer Davis, president, Houston Club. Welcome to members and guests.
- 9:05 Introduction and remarks by officers of Federation of Paint and Varnish Production Clubs. Milton A. Glaser, president; Joseph W. Tomeko, president-elect; C. Homer Flynn, executive secretary.
- 9:30 Introduction of and remarks by officers of National Paint, Varnish & Lacquer Assoc.
- 9:45 Remarks by Les Martin, Education Committee, Houston Club. Dr. John C. Calhoun, Jr., Dean of School of Engineering, Texas A&M. Educator's Viewpoint on the Shortage of Technically Trained Persons.
- 10:15 Marvin Smith, chairman, Dallas Production Club Technical Committee. Investigation for a Technique to Determine Loss of Paint Binder Over Wood Substrate.
- 10:45 Allan Richard, chairman, Houston Production Club Technical Committee. Evaluation of Mercadium Pigments.
- 11:00 William C. Naumann, product development group leader, Shell Chemical Co. A Modern Approach to Corrosion Prevention Through Protective Coatings.

#### AFTERNOON SESSION

- 1:30 W. H. Mylander, Public Relations Dept., E. I. du Pont de Nemours & Co. The Public Relations of Business.
- 2:15 Dr. C. Harold Fisher, U. S. Dept. of Agriculture, New Orleans, La. Research to Improve and Expand the Use of Southern Farm Products in Protective Coatings.
- 3:00 American Zinc Institute panel.
  J. A. Reising, moderator; Dr.
  A. C. Elm, C. H. Adams, Paul
  Whitford, panel members. Exterior House Paints.



## NUODEX ADDITIVES AND S/P CHEMICALS

TO HELP MAKE GOOD PAINTS BETTER

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## PERSONNEL CHANGES

#### ENTERPRISE

Logan Finnerty is the new western sales manager of the firm's Federal Varnish Division.



Logan Finnerty

tern states, Mr. Finnerty will have responsibility for a consultation service to jobbers and companies in industrial maintenance and

of products in wes-

In addition to development and sales

the training of employees and salesmen in methods of maintenance efficiency.

He has had extensive experience in the sanitary maintenance field, with 18 years as a salesman to the jobbing trade and as a manufacturer's representative. He has conducted his own sales consultation service, assisting jobbers in merchandising and marketing techniques and training jobbers' sales-

Mr. Finnerty has attended the University of Creighton in Omaha and the University of Maryland, where he majored in chemistry and bacteriology.

#### CELANESE

John P. Holmes, vice president of Celanese, has been assigned to direct the company's foreign operations, it was

He has also been named president of three subsidiaries, Celanese International Corp., Amcel Co., Inc., and Pan Amcel Co., Inc.

Mr. Holmes has been a company vice president since 1945, and was named a company director in 1955. He graduated from Georgia Tech in 1926 and was an instructor there for one year before joining Celanese as a yarn salesman.

The company also announced the election of Kenneth C. Loughlin as executive vice president, a newly created post for the firm.

Mr. Loughlin has been with Celanese since his graduation fron North Carolina State College in 1929. He was made vice president in charge of southern textile sales in 1951 and general manager of the Textile Division the following year. He has been a company director for the past two

In addition, the promotions to vice president of Ronald O. Gilbert, John W. Brooks and Alexander R. Cochran were announced.

#### GOOD YEAR

R. B. Warren, who became general manager of the Industrial Products Division on February 1, 1957, announced four other major promotions effective on the same date in the Division.

O. A. Schilling became sales manager, H. R. Comstock, assistant sales manager, R. E. Chapman, manager of the Central Region, and R. E. Mercer was named manager of hose sales.

Mr. Schilling has been with Gocdyear since 1939, and was Eastern manager of industrial products departments before his new assignment.

Mr. Comstock joined the company as a tire salesman in 1929. He has been central sales manager of the Industrial Rubber Goods Division since 1950.

Joining Goodyear in 1935, Mr. Chapman was an Industrial Products clerk and salesman before becoming a field representative and later manager of the hose sales department.

Mr. Mercer has been with the company since 1947. He was assistant manager of hose sales after being a field representative in Duluth, Minn., and Des Moines, Iowa.

#### WATSON-STANDARD



H. W. Carter



W. J. Hagedorn

Harry W. Carter has been elected secretary of the firm, it has been announced.

Mr. Carter has been with the company for more than 15 years. He is a graduate of the University of Pittsburgh, School of Business Administra-

Also announced has been the election of William J. Hagedorn as assistant

Mr. Hagedorn attended Duquesne University, and has been with the firm for the past 18 years in administrative

#### GENERAL ELECTRIC

George A. Darsie is the new Eastern District sales manager for the Silicone Products Department.

Mr. Darsie has been with the company since 1947, and was one of the first to join the silicone products sales force. He holds a B.S. in Electrical Engineering from Kansas University.

He is a member of the American Society of Civil Engineers.

#### NATIONAL CAN CORP.

George F. Henschel has joined the firm as vice president and general manager of sales,



it has been announced by Robert S. Solinsky, president.

Mr. Henschel had formerly held a variety of executive sales positions at American Can since 1930. The posts in-

cluded sales manager for non-food containers, sales manager for the Buffalo and Philadelphia districts, sales manager for the Atlantic Division, general sales manager of the Beverage Division and general manager of sales.

He will work on increasing sales service to current customers, and a program to enter new can markets.

#### UNION CARBIDE

D. S. Alcorn has been named assistant manager, and T. J. Hall product manager of the Fine Chemicals Depart-

Mr. Alcorn has been with the company since 1943, after graduation from the University of Pennsylvania with a B. S. in Chemical Engineering. He has been continuously associated with marketing and product development activities.

Dr. Hall joined the firm in 1952, after completing his Ph.D. at the University of Rochester. His undergraduate study was done at Carnegie Institute of Technology. He has been working with acrolein and reactive peracetic acid and their derivatives and their use as raw materials for polymers and pharmaceuticals.

Dr. Hall was a Fellow of Mellon Institute of Industrial Research at Pittsburgh.

#### SUCO

W. J. Caplinger has been transferred to the firm's Chicago Sales Division, after having been with the Eastern Sales Division in New York.

Mr. Caplinger has been with SUCO since 1951, serving in plant laboratories and sales offices before joining the Eastern Sales Division two years ago.

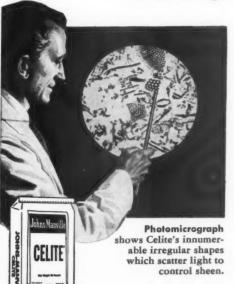
#### COLOR ASSOCIATION

Midge Wilson has been appointed assistant to Estelle M. Tennis, executive director, it has been announced by John M. Hughlett, president.

Miss Wilson will assist in developing the Association's expansion program to serve additional segments of indus-

She has been merchandising promotion coordinator for Seventeen, and fashion coordinator for B. Blumenthal & Co.





A soft uniform flatness, even at low angles, is the beautiful result of formulating interior paints with Celite\*. By forming a rich textured film that diffuses rather than reflects light, these microscopic particles assure an attractive flat appearance indefinitely. The surface never rubs up shiny. These same irregular particles also impart "tooth" to the film for strong, lasting adhesion to any surface.

Celite is diatomite, an extremely tough form of amorphous silica, that reinforces the paint film. And, the micro-porosity imparted by Celite checks blistering and peeling by aiding the escape of moisture vapor from unpainted plaster.

If you're concerned about low angle sheen, find out how Celite can give you complete control of this problem. Write for further information to Johns-Manville, Box 14 New York 16, N. Y. In Canada, 565 Lakeshore Rd. E., Port Credit, Ont.

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#### TIME FOR A SPRING TONIC?

Warmer weather is just ahead. It can cause poor flow-out, excessive tank loss, orange peel and cratering when the solvent evaporates too quickly. You can play safe by calling your nearby Solvents and Chemicals bulk plant. Our "Solvents Specialists" may be able to recommend one of our newly-developed solvents that will do a better job for you. Why not call today?

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HOOSIER SOLVENTS & CHEMICALS CORP. 1850 Luett Ave. — MEIrose 8-1361 Indianapolis 2Z, Ind. Nelson Road East. — Anthony 0213 Fort Wayne 8, Ind.

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#### HERCULES POWDER

Fred K. Shankweiler has been named director of sales of the Cellulose



F. K. Shankweiler Products Department, it has been announced by Elmer F. Hinner, the department's general manager.

Mr. Shankweiler succeeds Werner Brown, who has recently been named assistant general

manager of the Department.

A graduate of Pennsylvania State University, Mr. Shankweiler joined the firm in 1929 as a chemist at the Research Center. After several years he was assigned to the Paper Makers Chemical Department. He came to the Cellulose Products Department in 1944, and was manager of its sales districts in Chicago and New York before becoming sales manager for coating materials a year ago.

A. R. Olson has been appointed sales manager of the Cellulose and Chemicals Division of the firm's Virginia Cellulose Department.

Mr. Olson will be in charge of sales of chemical cotton, CMC and salt cake. He will also serve as liaison between Virginia Cellulose and Cellulose Products Departments on sales of ethyl cellulose. With the firm since 1933, he is a graduate of Iowa State College.

New district sales managers have been appointed in the Virginia Cellulose Department. They are J. G. Jarrell, Detroit, Richard S. Clark, New York, and Harold Jenkins, Chicago.

Mr. Jarrell is a graduate of the University of Delaware, and has been a senior technical representative in the Detroit office. He joined the firm in 1948 as a chemist at the Research Center.

Mr. Clark has been with the firm since 1940, and for the past several years he has been a technical representative in the New York office. He is a graduate of Franklin and Marshall.

Mr. Jenkins has been a senior technical representative in the Virginia Cellulose Department. A graduate of the University of Tennessee, he joined the firm in 1947.

Mr. Jenkins replaced R. E. Whitney, who has been transferred to Wilmington as supervisor of chemical cotton sales.

Mr. Whitney is a graduate of the University of Minnesota, and has been with the company since 1947. He has served as a technical representative in the Cellulose Products Department, and has been senior technical representative for the Virginia Cellulose Department in the Chicago district.

Also announced has been the ap-

pointment of **Herbert F. Schaefer** as a senior technical service representative in Hawthorn Chemical Corp. He will be primarily concerned with sales and marketing.

Mr. Schaefer has been with Hercules since 1940. He has been a chemist at the Research Center, and for the past six years assistant to the manager of sales research. He holds B.S. and M.S. degrees from the University of Alabama.

#### CELANESE

**Kirk E. Smith** has been made sales representative for the northern part of California and the northwestern states, with headquarters at the firm's branch office in San Francisco.

Mr. Smith attended the Merchant Marine Academy and the University of California at Berkeley. Before joining the company he was a sales engineer with Industrial Brownhoist Corp.

Edward M. Fox has been appointed sales representative in New England, attached to the district office in Leominster, Mass.

Mr. Fox was formerly sales representative for the Polyken Division of the Kendall Co. He is a native of Canada and graduated from McGill University.

John W. Bloom has been named sales representative in the Midwest for polyvinyl acetate emulsions used for paints, coatings and adhesives, with headquarters in the Cleveland district office.

Mr. Bloom was a chemist for the Glidden Co. and U. S. Gypsum Co. prior to joining Celanese. He attended Bowling Green State University and received a B.A. in Chemistry from Ohio Northern University.



Why this Hockmeyer Horizontal Paste Mixer brings you

### **3 IMPORTANT ADVANTAGES**

- 1. Faster mixing
- 2. Greater efficiency
- 3. Easier cleaning

The Hockmeyer Horizontal Paste Mixer's 3 sets of mixing blades are specially designed, precision built. They eliminate "dead spots" and material build-up on tank sides. Their double rolling action agitates the batch into a homogenous mass in the shortest possible time. The unit is excellent for lead pastes, wood fillers, caulking compounds, color dispersions and other heavy, nonflowing materials. Its greater mixing efficiency provides a bonus in the form of lower horse-power requirements.

One of the Hockmeyer Horizontal Paste Mixer's most important advantages is that it is self-unloading. Its unusual mixing action pushes out even viscous, non-flowing materials; the bottom center gate outlet controls the rate of flow.



Cleaning this mixer is easy. Just place a solvent in the machine and start the motor.

The Hockmeyer Horizontal Paste Mixer is safe to use, too. All external moving parts are covered with a steel guard. A removable steel

grating over the top opening prevents anything falling in and being caught in the blades. The Hockmeyer

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illustrated	N: Please send me your free, technical data sheet describing eyer Horizontal Paste Mixer
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My name	

U. S. RUBBER

George R. Vila has been elected a vice president of the firm, and ap-

G. R. Vila pointed general manager of the Naugatuck Chemical Division. He replaces John E. Caskey, who is retiring after 42 years with the company.

Mr. Vila, who joined the firm in 1936, was formerly

assistant general manager of Naugatuck Chemical. He was also a salesman in the rubber chemicals department, and synthetic rubber research manager for the Division.

In 1945 Mr. Vila was named assistant manager of research and development for the Division, and in 1949 he became manager of general product sales. He was appointed general sales manager in 1952 and assistant general manager the following year.

He holds a bachelor's degree in Chemistry from Wesleyan University and a master's degree in Chemical Engineering from M.I.T. He is a director of the National Agricultural Chemical Assoc., and a member of the American Chemical Society, the Chemists' Club and the Society of the Plastics Industry.

T. W. Brasfield is the new Los Angeles district manager of the Naugatuck Chemical Division, replacing G. L. Dennis, who has transferred to Naugatuck, Conn., for a new assignment on the Division's general sales staff.

Dr. Brasfield, who has a Ph.D. in Mycology and Plant Pathology from the University of Iowa, joined the organization in 1946. He will supervise sales of all the Division's products in 11 western states.







E. S. Ebers

Earle S. Ebers, formerly genera sales manager, has been appointed assistant general manager of Naugatuck Chemical, the post previously held by Mr. Vila. Harold M. Parsekian, who was assistant general sales manager, has been named general sales manager.

Mr. Ebers joined the company in 1937 as a research chemist. He has been plastics development manager for the Chemical Division, sales manager for Kralastic and Vibrin resins, and director of research and development for the Division. He holds a doctorate in Chemistry from Harvard University.

Mr. Parsekian has been with the firm since 1949, when it purchased the chemical division of Glenn L. Martin Co., where he was director of sales and technical services. He has been manager of Marvinol resin sales and manager of plastics sales. He holds a bachelor's degree in Chemical Engineering from Cooper Union Institute.

In another change in the Naugatuck sales organization, **Otto P. Steinen**, formerly assistant agricultural chemical sales manager, has been named sales manager for agricultural chemicals.

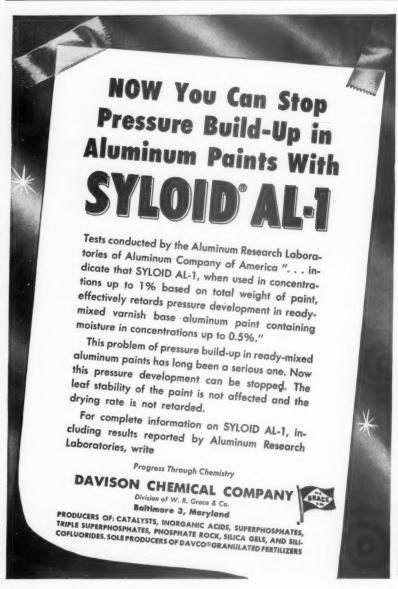
Mr. Steinen is a graduate of UCLA, and has been with the firm since 1947. He was formerly technical representative for agricultural chemicals in the Los Angeles area.

#### HARSHAW CHEMICAL

William A. Harshaw II has been elected vice president-Research, and Leslie N. Smith was named vice president-Scientific Division, it was announced.

Mr. Harshaw, a graduate of Western Reserve University, has been with the firm since 1944. He was previously sales manager of the Development Department and manager of the Philadelphia branch.

Mr. Smith has been with the company since 1919, and has held positions in the laboratory, cost accounting, and as manager of the general sales office. He is a member of the Electrochemical Society. He has been general manager of the Scientific Division since 1951, and will continue in charge.



#### NUODEX PRODUCTS

Lawrence J. Serkanic has been named chief of the protective coatings



L. J. Serkanic

laboratory replacing Frank X. Ritter, it has been announced by William J. Stewart, director of research and development.

Mr. Serkanic was formerly technical director of Jamestown Finishing

Products Co., and was previously associated with Egyptian Lacquer Mfg. Co. and Sapolin Paints, Inc., as senior chemist. He is a graduate of Brooklyn Polytechnic Institute.

Mr. Ritter has become regional sales representative. He joined the firm in 1951 as a chemist and was appointed director of the protective coatings laboratory in 1954. He was previously associated with Reichhold Chemicals, Inc.

#### W. R. GRACE

**Ralph W. Lamenzo** has been named manager of the firm's new paint plant in Guayaquil, Ecuador.

Now under construction, the plant will produce the Glidden line of paints under a licensing arrangement with the Cleveland paint firm.

Mr. Lamenzo has had extensive experience in the paint industry, and was formerly administrative assistant at A. C. Horn & Co. He was previously production manager for H. B. Davis Co. for 11 years.

He gained experience in Latin America as general superintendent for Bredell Paint Products Co. in Havana, Cuba, from 1925 to 1931.

Mr. Lamenzo is a graduate of Pratt Institute of Technology.

#### SHAWINIGAN RESINS

**Stedman C. Herman** has been appointed to the Technical Service Department, it has been announced by W. K. Wilson, technical service manager.

Mr. Herman had been in the Research Department prior to his new assignment. He will supplement the company's technical service activities in the adhesive industry.

Holder of bachelor and master degrees in Chemistry from the University of Connecticut, Mr. Herman was a Chemistry instructor at the University before he joined the firm as a research chemist in 1952.

#### CANCO

William K. Schmalzriedt has been appointed manager of the firm's International Division, it has been announced.

Mr. Schmalzriedt was formerly manager of the tinplate division of the

company's General Purchasing Department. He succeeds Wagner Van Vlack, Jr., who has been appointed assistant to the president.

He has been with the firm since 1934, when he became assistant to the purchasing clerk at the company's Newark, N. J., machine shop. He has been buyer, priorities supervisor, manager of the Government Controls Division and supervisor for engineering, machinery, fuels and factory supplies.

#### CARBIDE AND CARBON

Five new employees have joined the Development Department at the company's South Charleston, W. Va., plant.

They are N. E. Bolton, B. S. in Chemistry, University of Georgia; Dr. R. B. Gosnell, A.B. in Chemistry, Manchester College, and M.S. and Ph. D. in Organic Chemistry, Purdue,

and R. J. Hanna, B.S. and M.S. in Chemical Engineering, University of Delaware.

Also, Miss M. A. Stephens, A.B. in Chemistry, West Virginia University, and G. W. Warren, B.S. in Chemistry, Louisiana State University, and M.S. in Inorganic Chemistry, University of Arkansas.

#### HOLLAND COLOR

John Schutten has been named personnel manager of the subsidiary of National Cylinder Gas Co., it has been announced by C. R. Trueblood, president.

Mr. Schutten will be in charge of personnel and employee relations. He had previously been assistant plant and production control manager for the H. E. Morse Co. in Holland, Mich., and was associated with the G. Schutten Construction Co. there.



Since 1917, Fein's Tin Can Co., Inc., has been setting the industry's standards for practical, dependable containers. Today, more and more customers rely on Fein's for the answers to all their container problems ... exactly what you need ... exactly where and when you need them. Fein's complete line includes: Plain, Lithographed, and lined Steel Pails; Thinner, Varnish and Shellac Cans; 1 Callon and 1 Quart Triple-Tite Paint Cans; and a complete line of galvanized and houseware items.

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ATLAS CAN	CORP.								Brooklyn,	N. Y.
PEERLESS C	AN COR	P							Brooklyn,	N. Y.
COMMERCIA	LCAN	COR	P.						Newark.	N. J.
STANDARD (	CAN COI	RP.			*			Lee	tedale, Pgh.	, Pa.
SALES OFFICES:	Baltimore	: Cl	evel	and:	Cit	ncir	nati:	Bos	ton: Colun	bus:
Miami; Jacksony										
housely and Conta	L Can Car		4	41						



#### BETTER FINISHES

Walter Donbeck has become the firm's northern New Jersey representative for its line of industrial finishes, architectural and maintenance paints and strippable coatings.

Prior to joining the sales department, Mr. Donbeck spent six years as a laboratory technician with the company.

#### LOGO, INC.

**Richard Jarzombek** is the new chief chemist of the firm's coatings laboratory, it has been announced by M. A. Self, president.

Mr. Jarzombek will assume responsibility for the formulation of special finishes to meet customer needs. He will also handle sales service and evaluation and testing.

A Chemical Engineering graduate of Purdue University, he was a research group manager before his new appoint-

Write for complete

Weather-Ometer catalog.

ment. He has had experience both in the field and laboratory.

#### UNITED WALLPAPER

John R. Dove has been promoted to assistant to the sales manager of the Illinois Paint Works in Chicago. He was formerly sales coordinator in the home office.

Mr. Dove has been with the firm since 1952, and had been sales coordinator since 1953. He is a graduate of Lehigh University.

Eugene G. Balassie has been appointed sales manager of Benjamin Franklin Paint and Varnish Co., it has also been announced. He had previously held a staff position in the parent organization and had recently been assistant sales manager at Illinois Paint Works.

Mr. Balassie graduated from Brown University, and joined the firm in 1951. H. KOHNSTAMM & CO.

Paul L. Kohnstamm has been elected president of the firm, succeeding



P. L. Kohnstamm

Louis J. Wolf, who has been named chairman of the board, it has been announced.

Mr. Kohnstamm was formerly secretary of the corporation and a member of the board of directors.

Robert H. Pulver, former sales manager of the firm's Mid-Western Division and member of the board of directors, has been elected to the newly created post of executive vice president.

Other company changes include Arthur D. Vogel, from eastern sales manager to vice president and member of the board, and Walter J. Kohnstamm, from assistant treasurer to treasurer of the corporation.

Robert A. Phair and Richard S. Carmel were re-elected vice presidents, and Richard L. Kohnstamm and Herbert Haldenstein were elected to the board of directors.

#### COMMERCIAL SOLVENTS

J. F. Dudley has been elected vice president and will head the company's production and engineering activities, it has been announced.

Mr. Dudley had been chief engineer before his new assignment. He has been with the firm since 1944. A graduate of Virginia Polytechnic Institute, he is a member of the American Institute of Chemical Engineers, American Chemical Society, Society of the Chemical Industry, and the Chemists' Club of New York.

Also announced was the election of **Graham W. McMillan** to a vice presidency. Dr. McMillan will be responsible for the firm's research and development program and the operation of the Central Research Laboratories at Terre Haute, Ind.

Dr. McMillan was manager of development prior to his new assignment. He received a B.S. degree from Monmouth College, and a Ph.D. from the University of Illinois. He is a member of the Commercial Chemical Development Assoc., Society of the Chemical Industry, American Chemical Society and the Chemists' Club of New York.

W. Ward Jackson, vice president, has been named to head the company's sales and marketing program. In addition to overall sales, Mr. Jackson's new responsibilities will include the firm's advertising and sales promotion, market development and traffic activities.

Mr. Jackson was previously vice president of the Petrochemicals Division.

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But now you can do something about it, as it affects your product, with the Atlas Weather-Ometer.

Weathering durability and color fastness is a major problem in developing a new paint product. Reliable answers to a new product's resistance to weathering can be obtained with speed and accuracy in the Atlas Weather-Ometer. Test programs can be exactly duplicated at any time to give accurate comparative data of various formulas.

For quality control in production—the Weather-Ometer is useful in maintaining the quality standard of the product, by checking each batch run for any deviation from the established weathering and light fastness standards.

A positive control of specimen temperatures greatly increases the accuracy of test results. Automatic humidity control up to dew point is available as optional equipment.

Both horizontal and vertical testing is available. Shallow containers are used for semi-liquid material and vertical panels for solids.

All automatic controls including complete voltage controls are located on the front panel above the test chamber door. Source of light is two Atlas enclosed violet carbon arcs.

Sales representatives in principal cities throughout the world.



David Busker has been appointed supervisor of coatings customer service,



it has been announced by Donald M. Joseph, Plastics Division manager.

Mr. Busker has been recently associated with Benjamin Moore & Co. as industrial research chemist. He has also had experi-

D. Busker has also had experience in the protective coatings industry with Better Finishes and Coatings, Hilc Varnish Corp. and Roxalin Flexible Finishes

He is a graduate of CCNY with a B.S. in Chemistry, and has done graduate work at the University of Maryland, George Washington University and the Catholic University.

Mr. Busker is a member of the N. Y. Paint & Varnish Production Club and the American Chemical Society.

#### ARCHER-DANIELS-MIDLAND

Walter G. Andrews, manager of the Resins and Plastics Division, and Ralph Bruce, manager of the Linseed Division, have been elected vice presidents, it has been announced.

Robert S. Mathews, manager of the Vinyl Plasticizer Department, James W. Stowell, sales manager for soybean oil, and Harry R. Wortham, who has been directing operations of the Flast Fibre Division, have been elected assistant vice presidents. Mr. Wortham has also been elected assistant secretary.

Mr. Andrews was named to head the newly formed Resin and Plastics Division last fall. He has been with the firm since 1941, serving as control chemist, research chemist, and as a member of the firm's technical sales service staff. He has also been director of specialty oil sales, assistant vice president, and assistant general sales manager. He is a graduate of Carleton College.

Mr. Bruce was appointed manager of the Linseed Division last September. He joined the firm's Grain Division in 1937, and was foreman of the Soo Terminal grain elevator in Minneapolis. He has been a buyer and merchandiser of coarse grains, a flax buyer, and was in charge of the Flax Department. He attended Dartmouth College and the University of Minnesota.

Mr. Matthews became manager of the Vinyl Plasticizer Department in 1955, after an assignment as sales manager for specialty oils. A graduate of Pratt Institute, he has been with the company since 1937.

Mr. Stowell joined the firm in 1943 and held positions in the purchasing department, Soya Products Division, and Soybean Oil Sales Division. He attended the University of Minnesota. He has also been director of edible oil sales.

Mr. Wortham has been director of operations of the Fibre Division since 1954. He has been with the firm since 1947, and has served in the Minneapolis mill and the Specialty Oils Department. He is a graduate of the University of Minnesota and St. Paul College of Law.

George P. Woodward has been appointed manager of the firm's Philadelphia district sales office. He has been with the company since 1941, and has been acting manager of the Philadelphia office for several months. He is a Chemical Engineering graduate of Pratt Institute.

Charles M. Allen has been promoted to sales manager of the Linseed Division. He has been assistant sales manager of linseed oil since 1955. He is a graduate of the University of Minnesota, and has been with the firm since 1950.

Daniel A. Copenhaver has retired as director of linseed oil sales, it has also been announced. He joined the firm in 1953 in a sales capacity, and was named sales manager of marine oils in 1954. He became director of linseed oil sales last year.

#### MARTIN VARNISH CO.

C. J. Mondi, treasurer, has been elected executive vice president of the firm, it has been announced by Wells Martin, president.

Also announced was the resignation of Leon S. Martin, vice president and director. Mr. Martin had been with the firm for 37 years.



NAFTONE, INC., 515 Madison Ave., New York 22

#### NAPKO

Walter H. Duve, production superintendent, has been named vice president in charge of production, it has been announced.

Mr. Duve, one of the firm's oldest employees in terms of service, has been in almost every phase of the company's operations from paint formulator to construction engineer during the course of 30 years.

Sidney V. Smith is the new vice president in charge of trade sales, retail stores and merchandising.

Mr. Smith is a Chemical Engineering graduate of Texas A&M, and has been with the firm for six years. He began as a sales engineer and has been serving in a sales management role in preparation for his new assignment.

Joseph E. Rench has been appointed vice president in charge of industrial sales, research and product development.

Mr. Rench, a graduate of DePauw University, was formerly technical director. He has won recognition in the paint industry for his research ability and knowledge of coating problems.

#### BETTER FINISHES

Howard R. Hutchinson has been assigned as sales representative for the Connecticut, Long Island and Metropolitan New York areas for the firm's line of industrial finishes, architectural and maintenance paints and strippable coatings.

Mr. Hutchinson represented Goodyear Tire and Rubber Co, and the Briggs Mfg. Co, in the New York suburban territory before joining the company's training program for sales personnel.



E. Noblet

#### SINCLAIR CHEMICALS

Earl Noblet has been appointed assistant manager of Market Develop-

ment it has been announced.

Mr. Noblet had previously been engaged in market research activities. He is a graduate of Brown University with a degree in Chemistry, and had five years of experi-

ence in research and development of organic intermediates and nitrogen chemicals before joining the firm in 1954

He is a member of the American Chemical Society, Chemical Industries Assoc., Chemical Market Research Assoc., and American Soybean Assoc.

#### MINNESOTA LINSEED OIL

E. W. Kaufmann has become Philadelphia and Baltimore representative, it has been announced by E. H. Russell, president.

Mr. Kaufmann is a graduate of Lehigh University with B.S. and M.S. degrees in Chemical Engineering. He has had 22 years of experience with raw and processed drying oils, and has been a technical service man, salesman and district manager for an area covering Philadelphia through Virginia.

Active in industry affairs, Mr. Kaufmann has been president and treasurer of the Philadelphia Paint, Varnish and Lacquer Assoc.

#### NOPCO

Four new company officers have been elected, it has been announced by Ralph Wechsler, president.

George H. Faux, former secretary, has become treasurer. He fills the post vacated by the retirement of Albert A. Vetter after 38 years of service with the firm.

Alfred O. Brookes, former assistant secretary, has become secretary. Robert M. Urich is the new assistant treasurer. Julius J. Denzler, head of the firm's Legal Department, has been named assistant secretary.

#### BAKELITE

A. T. Callas has been appointed technical representative for the Surface Coatings Division in the Detroit district office, the firm has announced.

Mr. Callas will be responsible for sales and customer service of vinyl, phenolic, epoxy and polyethylene resin products for surface coatings.

He is a graduate of Brooklyn Polytechnic Institute, and holds a B.S. degree in Chemical Engineering. He has been with the firm since 1954.



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- \* non-foaming \* increases freeze-thaw
- stability
  \* minimum thinning action
- ...constant viscosity
  \* add to modifying alkyd
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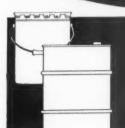


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#### GENERAL ELECTRIC

L. S. Moody has been named manager of the New Product Development Laboratory of the Chemical Development Department at Pittsfield, Mass., it has been announced by A. E. Schubert, department manager.

Dr. Moody will have responsibility for conducting research, product development, product design and application development programs for the department.

Dr. Moody is a graduate of Wesleyan University, and holds a Ph. D. from the University of Wisconsin. He worked on the Manhattan Project at M.I.T. as a research chemist.

He joined the company in 1945 as a research chemist in the Plastics Laboratory, and was named to a supervisory position there in 1951. He is a member of the American Chemical Society,

the American Management Assoc., the American Assoc. for the Advancement of Science and the Armed Forces Chemical Society.

#### DIAMOND ALKALI

Jack E. Davis has been promoted to the post of special staff assistant in the Sales Department, it has been announced by W. H. McConnell, vice president-sales.

Mr. Davis comes to his new position after nearly 11 years of experience as a member of the firm's Philadelphia branch sales office. He joined the company in 1939 as a sales clerk.

He is a Business Administration graduate of the University of Pittsburgh, and a member of the Philadelphia Chemical Club. He is president of the Whitpain Township Lions Club.

#### DEWEY AND ALMY

William S. Sale has been appointed research chemist in the paint section,



oratory, it has been announced. Mr. Sale will as-sist W. T. Scheu-

organic chemicals

customer applica-

tions research lab-

fele, paint section head, in the evaluation of new emulsion paint vehicles and

development of improved formulations for existing Everflex vinyl acetate copolymer emulsions and Darex polyvinyl acetate emulsions as vehicles for water base paints.

A Chemical Engineering graduate of the University of Colorado, he was formerly with the Iowa Paint Co.

Paul W. Hatch has been named sales representative for the Organic Chemicals Division.

A graduate of the Harvard Graduate School of Business Administration, Mr. Hatch will specialize in sales pro-

#### GLIDDEN

Paul E. Sprague has retired after 42 years of service, it has been announced by Dwight P. Joyce, chairman and president.

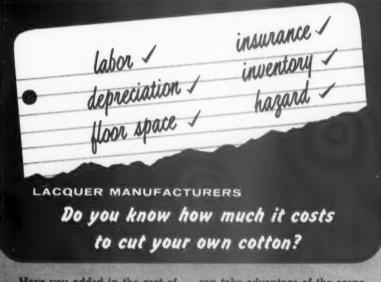
Mr. Sprague had been a vice president and director since 1936, and for the past ten years a member of the company's executive committee, chairman of its research committee and executive head of the firm's Southern Chemical Di-

He joined the firm in 1915 after receiving a Master of Science degree in Chemical Engineering from Ohio State. He was a chemist, sales engineer and purchasing agent before becoming assistant manager of industrial sales and later Eastern industrial sales manager.

During World War II Mr. Sprague was a member of the Lead Pigment, Zinc Pigment and Titanium Pigment Industries advisory committees of the War Production Board and the Office of Price Administration.

During his career he has served as a member of the executive committee of the National Soybean Processing Assoc. of Chicago, the Lead Industries Assoc. of New York, the Metal Powder Assoc. of New York, which he founded, and as president of the Soy Flour Assoc. of Chicago.

Mr. Sprague has been vice president and manager of the Euston Lead Co., the Metals Refining Co. and the Growth Products Co. He has also been vice president and director of the Jacksonville Processing Corp., The Glidden Co., Ltd., Canada, and Glidden International C. A. of Caracas, Venezuela.



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can take advantage of the economies our large-scale operations permit. The savings are yours! Without tying up your valuable floor space, personnel, and equipment. Without "broken packages."

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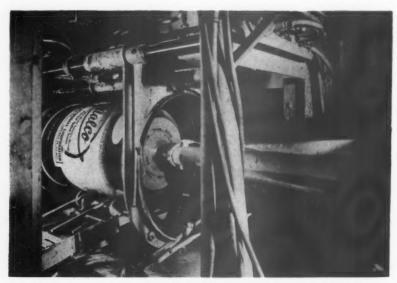
Suppliers to the Paint and Varnish Industry

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PAINT AND VARNISH PRODUCTION, April 1957

## LINNING STEEL CONTAINERS

## Centrifugal Spray Process Developed by Rheem Manufacturing Insures Uniform Inner Coatings



Centrifugal spray equipment applies container lining to interior of steel shipping container body. The fully automatic mechanism is capable of achieving a high degree of film uniformity.

Development of a centrifugal spray coating process promises greatly improved inner-coat drum linings and improved protection for products such as paints which are shipped in steel containers.

The process, developed by Rheem Manufacturing Co. of Chicago, assures a uniform inner coating, and decreases pinholing and blistering by reduction of the solvent content of the lining material.

The accelerated application method is readily adaptable to high-speed production processes, and eliminates dependence upon the skill of the operator for a uniform coating.

According to E. F. Paquette, vice president and general manager of the Rheem Container Division, the difficulty in conventional methods of lining materials application shows up primarily in the lack of accurate process control. The centrifugal spray coating process, he said, was developed to overcome that problem.

The new method of applying



Physical characteristics of container linings are evaluated for ability to withstand handling and abuse. Above instruments test resistance to impact, flexibility, hardness.



Thickness of container lining is measured in wet and cured states. Dry film thickness is measured by Magnegage, Elcometer and General Electric thickness gage.

inner coatings consists of a dynamically balanced disc which spins at more than 3,600 revolutions per minute, casting off a continuous curtain of fine, atomized coating material in a completely controlled uniform spray. The rotor travels through the horizontal container and the material is applied on both the forward and return strokes.

It is the uniform distribution of centrifugal spray equipment that makes possible the use of lining materials with substantially lower solvent content.

Elimination of uncontrolled air turbulence as the coating is applied is another advantage of the centrifugal spray coating process. Air is not entrained in the lining material as it is applied to the container body, which prevents atmospheric dirt, grease and dust from being carried into the lining material.

Air turbulence is eliminated through the stationary positioning of the container being lined, further insuring uniform distribution of the lining material. Motion of the high-speed rotor head, both in rotation and in longitudinal travel through the container body, is on the same axis as that of the cylindrical container.

Another major improvement in the inner coating process developed by Rheem is the use of a large oven for curing the linings after application by centrifugal spray.

The container bodies are placed into the oven on end, in contrast to conventional methods in which the drums are placed horizontally for baking. In the vertical position, each drum shell serves as an auxiliary oven flue, introducing a continuous flow of a large volume of properly controlled heating air across the lining.

The new baking process rapidly removes solvents to prevent porosity and blistering of the lining, and eliminates condensation of volatile resins components.

The oven is 145 feet long, and contains an additional cooling section of 23 feet. The container bodies travel on a chain conveyor floor through the oven, three abreast. A variable sheave on the drive shaft of the conveyor permits adaptation of its speed to curing requirements.



Curing steel container linings by "vertical bake" is achieved in new oven, above, installed in Rheem container plants. In vertical position, each drum serves as an auxiliary oven flue.



At left is drum head with vinyl-type lining completely charred during exposure to excessive heat. At right is same lining correctly baked. Close oven temperature control is essential.



Careful selection of the proper lining for each product is the basis for the success of a lined container. Above is series of lining failure types illustrating importance of correct lining choice.

ACCOMPANIA DE LA COMPANIA DE LA COMP

#### **GE Plans New Laboratory** for Silicone Products Plant

Construction of a new product and process development laboratory and further expansion of other facilities of the Silicone Products Department of the General Electric Co, has been announced by Dr. Charles E. Reed, general manager.

The laboratory is expected to be ready for occupancy in Janu-

ary, 1958. It is part of a \$3 million capital outlay planned for the silicones plant at Waterford, Conn., during 1957. More than \$1 million worth of additional facilities were added or nearly completed during 1956.

Dr. Reed described the current expansion as part of a planned increase of all department facilities needed to study and manufacture silicone products to meet increasing industrial and consumer needs. An additional 69 acres of land adjacent the original plant site was acquired in 1956 for new facilities.

The new two-story research building will double the available space for laboratories, and will be fully equipped for study of all

aspects of silicone chemistry. The General Electric Research Laboratory at The Knolls, Schenectady, however, will continue the fundamental research in silicones, according to Dr. Reed.

Nearing completion at the Waterford plant is a 16,000-square foot addition, which will be used to augment existing facilities for the handling and storage of materials as well as to provide additional office space.

The Waterford plant manufactures basic chemical intermediates and silicone gums, rubbers, resins, fluids, emulsions, greases and specialties.

#### Sales Representatives Named

Diamonite Products Mfg. Co. of Canton, Ohio, has named sales representatives for its extra-high density cylindrical grinding media for grinding paints, enamels and other products.

Harry G. Knapp, 4918 Washington Blvd., St. Louis 8, Mo., will handle Diamonite sales in the St. Louis Metropolitan area.

Great Western Chemical Co. of Seattle, Wash., will be Washington representative for Diamonite grinding rod sales, while Great Western Chemical Co. of Oregon, in Portland, will represent the firm in that state.

Ducros and Co., Inc., of Cleveland, grinding rod sales representative in western New York and western Pennsylvania, will also handle sales in northern Ohio.

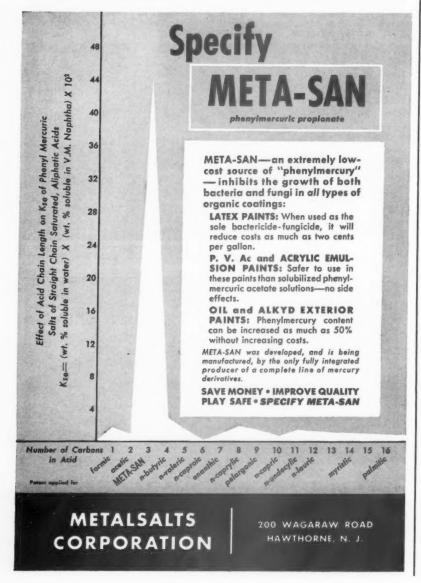
#### **Discuss House Paints**

The New York Paint and Varnish Production Club hosted the Zinc Pigments Committee of the American Zinc Institute in a discussion of "Exterior House Paints" at the March meeting.

Members of a Zinc Institute panel reviewed the function of, and need for, zinc oxide in exterior house paints. They presented data on standard house paint formulations and improvements in blister resistant paints.

Major speakers on the program were Dr. A. C. Elm, N. J. Zinc Co.; Paul Whitford, Eagle-Picher Co., and Clovis H. Adams, Sherwin-Williams Co.

Dr. James S. Long of the University of Louisville was scheduled to speak on "Epoxy Resins" at the April meeting of the group.



## Protective Coatings Papers to Compete for Awards

Herbert E. Hillman, chairman of the Program Committee of the Federation of Paint and Varnish Production Clubs, has announced the establishment of awards for the best papers in the competition by individuals associated with the organic coatings industry sponsored by the Federation.

To be known as the Roon Foundation Awards, they have been established by Leo Roon, head of the Roon Foundation. Raw materials suppliers and members of educational institutions have been declared eligible for the competition.

Two classes of awards have been established. The Open Competition Awards will be open to anyone involved in study of or engaged in work related to the protective coatings industry, including paint, varnish and lacquer manufacturers, raw materials suppliers and members of research laboratories and universities.

First prize in the Open competition will be \$450. Second prize will be \$250 and third prize \$175.

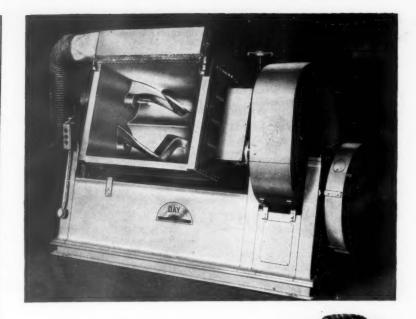
Class A Members Awards will be limited to class A members of the Federation only. Values of first, second and third prizes will be the same for Class A members as for the Open competition.

Papers in both catagories will be rated on originality, scientific importance, practical value to the coatings industry, completeness of discussion, significance of deductions and quality of composition.

Papers will be required to be contributed by one or no more than two individuals. None of the work may be originated from, be guided by, or be any part of a Paint and Varnish Production Club.

An award committee of five members is to be appointed by the President of the Federation.

The committee is not obliged to award prizes if it considers none of the submitted papers worthy of such recognition.



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#### Joliet Selected by Amoco for New Chemical Plant

Amoco Chemicals Corp. has announced the selection of Joliet, Ill., as the site for a chemical manufacturing plant which will use a new hydrocarbon oxidation process.

According to Jay H. Forrester, president, engineering and construction on the unit was to have begun late last month. The new plant will be built on a 400-acre

site four miles southwest of Joliet on the Des Plaines River.

The plant is expected to begin operations in 1958. The site was selected because of available water, proximity to raw materials and markets, and good transportation, according to Mr. Forrester. It will employ approximately 160.

Production capacity is planned to be 60 million pounds annually in the manufacture of phthalic anhydride, isophthalic acid, terephthalic acid, dimethyl terephthalate, dimethyl isophthalate and benzoic acid.

The products are chemical intermediates used in the manufacture of alkyd resins for the paint industry, dye stuffs, plasticizers, and

polymers for the synthetic fiber and film industry. The raw material, mixed xylenes, will be obtained from the Standard Oil Co. (Indiana) refinery at Whiting, Ind.

Manager of the plant will be C. L. Parris, who has been chief engineer at the El Dorado, Ark., refinery of the American Oil Co.

The hydrocarbon process enables the production of a diversified line of chemicals at a single plant from one source, using petroleum raw materials. Standard Oil Co., parent of Amoco Chemicals, holds world-wide exclusive rights to the process.

#### Facts Book Available

The Manufacturing Chemists' Assoc. has announced the publication of the third edition of "The Chemical Industry Facts Book."

The 160-page basic reference work on the chemical industry is priced at \$1.25 for single copies, with discounts on bulk quantities.

Illustrated with charts, graphs and tables, the new edition updates information on topics ranging from the industry's role in the economy to chemicals and nuclear energy.

It is anticipated that one of the principle uses for the book will be in schools and colleges as a supplementary text and reference. A 20-page Teacher's Guide prepared by Dr. John S. Richardson, president of the National Science Teachers Assoc., is available free to educators for use with the Facts Book.

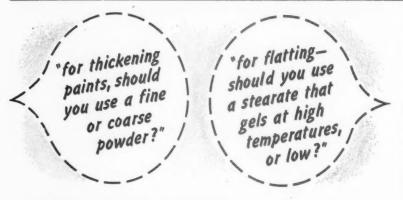
#### **New Petro-chemical Plant**

Construction of a petro-chemical plant at Potwin, Kansas, by the Vickers Petroleum Co., Inc., was scheduled to begin this month. The \$2 million plant will be a Udex extraction unit designed by Universal Oil Products Co. and constructed by Procon, Inc., of Des Plaines, Ill.

Completion date for the structure has been set for January, 1958.

The chemical raw materials derived from the extraction unit will be used in the production of paint and lacquer. Other uses will be in the fields of plastics, medicines, explosives, food preservatives and synthetics.

More than 15 million gallons of chemicals will be produced annually at the Vickers plant in Potwin.



### **FOR THE RIGHT ANSWERS**

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Aluminum stearate is used to perform many important functions in paints, varnishes and lacquers. And since each of these uses is affected within extremely broad ranges by variations in the stearate of amount of moisture, ash—both washed and soluble—free stearic acid, fineness, bulkiness, gelling properties...it will pay you well to get complete and specific recommendations on stearates from the most authoritative source there is.

And this, alert paint makers know, means Metasap. Metasap is the oldest and largest maker of stearates in America—with a research staff which is close to the paint maker's constantly changing needs...with equipment that consistently produces "the cleanest stearates made". To get the best answer to your next question on stearates, come to Metasap.

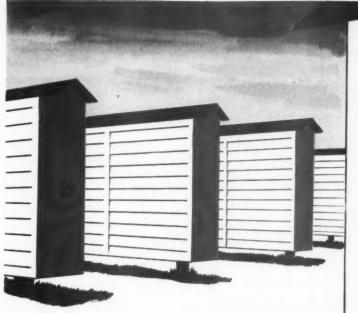


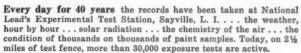
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For years leading paint makers have said, "Use lead." Today they specify Dutch Boy Basic Silicate White Lead "45X". And at National Lead's Sayville Experimental Test Station, anyone can see why.

Here, for all to see, are exposure panels that give proof "45X" is lead in its most efficient and economical form

Proof that "45X" improves selfcleaning, yet preserves film integrity of *white* House Paints.

Proof that "45X" increases film durability and maintains color uniformity of *tinted* House Paints.

Proof that "45X" strengthens adhesion in Primers.

In paint after paint, Dutch Boy "45X" steps up key properties underlying *uniform* performance... stops complaints *before* they start.

#### Cost actually goes down

In "45X" proportionately larger amounts of lead are available. That's because the reactive portion of each pigment particle is concentrated at the surface.

Fewer complaints, fewer pounds of lead! That's why it's profitable to make your exterior paints with Dutch Boy Basic Silicate White Lead "45X".



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For more data, see Chemical Materials Catalog Pages 330-334



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## NEWS

#### **Purchase Paint Firm**

Kanartex Coatings, Inc., of Galesburg, Ill., manufacturer of industrial and maintenance coatings and production finishes, has been purchased by Kish Industries, Inc., of Lansing, Mich.

Announcement of the purchase was made by Steven P. Kish, president of Kish Industries. The firm lists plastic and metal products, tool and design, and master die models and patterns among its products.

Kanartex, founded in 1931, was purchased from Dr. Eugene W. Kanning and Dr. Robert J. Hartman, formerly of the Chemistry Department of Indiana University. They will assume official positions with Kish Industries, according to Mr. Kish.

Incorporation within Kish Industries enables the paint firm to expand its market to a nationwide basis. The market was formerly limited to a 100-mile radius of Galesburg.

Plans are for a \$2 million to \$3 million sales volume in paints in the next three years, according to Mr. Kish. Brands marketed by Kanartex are Gay-Lux, production finishes, and Permalay, industrial maintenance and decorative fin-

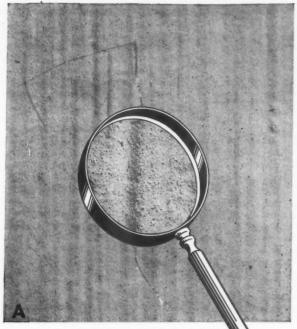
Later utilization by the paint firm of a recently acquired chemical plant in Trenton, Mich., is planned.

#### Screen Traffic Paint Film

A Hercules Powder Co. film, "Highway Life Lines," has been selected by prescreening jurors for final screening at the 1957 Golden Reel Film Festival sponsored by the Film Council of America.

The film depicts the best methods for selecting and applying traffic paints. Against a backdrop of highway scenes from coast to coast, the film covers such subjects as methods of evaluating traffic paints, factors influencing paint performance and various methods of applying traffic paints.

The 16 mm. film is in sound and color, and was produced by Farrell and Gage Films, Inc., of New York.



Contains 2.8 pounds zinc oxide per galla

### Are you using enough ZINC OXIDE for

#### **DURABILITY?** ADEQUATE

The cedar panels above are coated with conventional (linseed oil vehicle) exterior paints of constant pigment volume concentration. Both have been tested vertically to a southern exposure for 31/2 years in Central U.S.A., where cracking failures are prevalent.

The difference: the zinc oxide content in the pigment of Paint A is 2.8 pounds per gallon - in Paint B, 1.8 pounds per gallon, with inert extender added.

This test - and others made under widely varying conditions of climate and exposure-demonstrate that resistance to failure by cracking depends on adequate zinc oxide content. The unretouched photos of the panels above, clearly show the characteristic film integrity of high-ZnO paints.

The qualities imparted to any good paint by adequate quantities of zinc oxide are well known...and time-proved. In balancing a formulation, zinc oxide

levels must be kept high to insure customer satisfaction. With this in mind, consider:

Are you formulating your paints for maximum possible quality? Are you formulating your paints with enough zinc oxide?

#### ENOUGH ZINC OXIDE GIVES YOUR PAINT . . .

- DURABILITY
- Mildew resistance
- Opacity to ultra-violet light
- Tint retention
- Self-cleaning action

Technical reports are now being prepared by member laboratories of AZI on the benefits of proper zinc oxide usage. To receive copies of these reports, mail coupon.



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Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired (to foreign countries \$1.00 per copy) to the publisher.

#### Surface Coatings Based On Vinyl Copolymers

U. S. Patent 2,782,175. Paul F. Bruins, Brooklyn, N. Y., and Stephen S. Dorn, North Arlington, N. J., assignors to Carboline Co., St. Louis, Mo., a corporation of Missouri.

A method which consists in forming an original solution of a copolymer in a solvent which includes furfural, said copolymer being a copolymer of vinyl chloride and vinyl acetate and vinyl alcohol, said copolymer having a maximum of substantially 10% of copolymerized vinyl alcohol and a maximum of substantially 10% of copolymerized vinyl acetate and a maximum of substantially 91% of copolymerized vinyl chloride, the weight of the furfural in said solvent being at least substantially equal to the weight of said dissolved copolymer resin, carrying out a reaction between said dissolved copolymer resin and only some of said furfural in said solution to produce a modified solution having dissolved therein a reaction product of said dissolved copolymer and said furfural containing acetal groups, said reaction product remaining dissolved in said modified solution, said modified solution containing unreacted furfural and being stable on storage in closed containers.

#### Film Forming Oil Stabilized With Dibasic Lead Phosphite

U. S. Patent 2,783,160. Jolly J. Taylor, Los Angeles, Calif.

In a composition of matter, the combination with a film former taken from the group consisting of the drying oils, semi-drying oils, drying alkyds, and semi-drying alkyds, of a minor effective amount of dibasic lead phosphite as a stabilizer therefor.

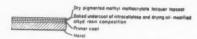
#### **Coating Composition**

U. S. Patent 2,780,555. Eugene Paul Budewitz, Homewood, Ill., assignor to The Sherwin-Williams Co., Cleveland, Ohio, a corporation of Ohio.

A composition of matter comprising an ungelled aqueous solution of zirconyl ammonium carbonate and zinc ammonium alginate.

#### Methyl Methacrylate Lacquer

U. S. Patent 2,782,131. William T. M. Johnson, Philadelphia, Pa., assignor to E. I. du Pont de Nemours and Co., Wilmington, Del., a corporation of Delaware.



U. S. Patent No. 2,782,131

A metal article having a hard, adherent, crack-resistant, multiple-layer coating comprising a layer of a coating composition and a superposed layer of pigmented methyl methacrylate lacquer in adherent contact therewith, said first-mentioned layer being a baked layer of a liquid coating composition comprising pigment, solvent, and organic film-forming material, the latter comprising 10-25% of lacquer-grade nitrocellulose, 0-7% of amino-aldehyde resin, 0-12% of plasticizer, and 60-90% of alkyd resin, said alkyd resin being modified with 35-70%, by weight of the finished resin, of a member of the group consisting of glyceride oils having drying properties and fatty acids derivable therefrom, and the methyl methacrylate component of said pigmented methyl mathacrylate lacquer having a relative viscosity between 1.117 and

#### Methyl Methacrylate Lacquer

U. S. Patent 2,782,132. William T. M. Johnson, Philadelphia, Pa., assignor to E. I. du Pont de Nemours and Co., Wilmington, Del., a corporation of Delaware.



U. S. Patent No. 2,782,132

A metal article having a hard, adherent, multiple-layer coating consisting of a layer of pigmented primer in adherent contact with said metal, a layer of undercoat in adherent contact with said primer, and a topcoat layer of pigmented methyl methacrylate lacquer in adherent contact with said undercoat, said undercoat consisting of lacquergrade nitrocellulose and 5-30% of pigment based on the total weight of the nitrocellulose, and the methyl methacrylate component of said pigmented methyl methacrylate lacquer having a relative viscosity between 1.117 and 1.196.

#### Hydrocarbon Drying Oil

U. S. Patent 2,780,664. George E. Serniuk, Roselle, N. J., assignor to Esso Research and Engineering Co., a corporation of Delaware.

The process of preparing a drying oil which comprises contacting a mixture of

75 parts by weight of butadiene and 25 parts by weight of isobutylene in the presence of about 18.6 to 25 wt. percent of a complex of boron fluoride and ethyl ether in the mole ratio of 1.0:1.0 to 1.2:1.0, and in the presence of about 25 to 125 volume percent of a halo-alkane diluent, at a temperature of about -15° C.

#### **Brushing Polychrome Finishes**

U. S. Patent 2,780,559. Vincent L. Sahli, Bay Village, Ohio, assignor to The Sherwin-Williams Co., Cleveland, Ohio, a corporation of Ohio.

The method of decorating a surface which comprises applying thereto a coating composition comprising an organic film-forming binder having dispersed therein from about 0.075% to about 0.3% by weight of the entire composition of a non-drying alkyl silicone polymer having a viscosity of from about 10 to about 120,000 centistokes, and from about 5.5% to about 13.5% by weight of the entire composition of a non-leafing aluminum pigment having a particle size no greater than about 100 mesh, rerolling the thus coated surface before dry with a paint roller having an irregular roller surface. and allowing the surface to dry.

#### Pointing and Caulking Compound

U. S. Patent 2,776,906. Donald Hill and Harry M. Whitney, Toronto, Ontario, Canada.

A compound for use in pointing comprising the following ingredients mixed together in substantially the following proportions by weight:

75 to 90 lbs. of silica sand

15 to 25 lbs. of crushed silica flour

15 to 17 lbs. of white lead

6 to 8 lbs. of litharge

10 to 14 lbs. of powdered or dry whiting

#### Free-Flowing Powdered Waxes

U. S. Patent 2,777,776. Joseph A. Kieras, New London, Pa., assignor to The Atlantic Refining Company, Philadelphia, Pa., a corporation of Pennsylvania.

A free-flowing powdered wax composition comprising a physical mixture of a powdered friable wax and from 0.25 percent to 2.0 percent powdered tri-calcium orthophosphate said tri-calcium orthophosphate being distributed on the surface of the particles of the powdered wax.

#### **Asphalt Emulsions**

U. S. Patent 2,780,557. Harley F. Hardman, Lyndhurst, and Robert F. Jenkins, Cleveland, Ohio, assignors to The Standard Oil Co., Cleveland, Ohio, a corporation of Ohio.

An asphalt emulsion having satisfactory asphalt content, viscosity, stability and demulsibility, comprising as

separate phases, asphalt which does not adhere satisfactorily to aggregate, and water, the two phases being dispersed and the dispersion stabilized with the aid of a water-soluble alkali metal soap, and, as an additive dispersed in the asphalt phase of the emulsion, an amount within the range from 0.5% to 2% based on the asphalt content of the emulsion, to improve the adhesion characteristic of the asphalt, of the product of reacting a liquid olefin and phosphorus pentasulfide in the proportion of about 0.25 to 0.75 mole of phosphorus, pentasulfide per mole of olefin at a temperature witnin the range of 150° to 425° F., and then reacting the obtained reaction product with a higher aliphatic hydrocarbon amine having from 8 to 24 carbon atoms in the proportion of about 0.1 to about 0.15 equivalent per saponification equivalent of the reaction product.

#### Vinyl Chloride-Vinylidene Chloride Copolymers

U. S. Patent 2,776,273. Antoine P. Richard, Villeurbanne, France, assignor to Societe Anonyme des Manufactures des Glaces et Produits Chimiques de Saint-Gobain, Chauny & Cirey, Paris, France.

A process of producing copolymers of vinyl chloride and vinylidine chloride which comprises forming an aqueous emulsion of vinyl chloride, vinylidine chloride, and a plurality of catalysts, one said catalyst being an azo polymerization catalyst and another said catalyst an inorganic peroxide catalyst.

#### Manufacturing Drying Paints

U. S. Patent 2,781,386. Karl Culemeyer, Hamburg-Langenfelde, Germany, assignor, by mesne assignments, to Willy Spangenberg & Co., Hamburg-Eidelstedt, Germany, a firm.

The process of manufacturing drying paint bases which comprises reacting at a temperature of approximately 210° C. a substantially pure tallic oil fatty acid mixture, produced by rectification of tallic oil under high vacuum, with vinyl acetate, the proportion of the vinyl acetate to the fatty acid mixture being approximately equimolar.

#### Stabilizer for Paints

U. S. Patent 2,783,159. Jolly J. Taylor, Los Angeles, Calif.

In a coating composition, the combination with a film former taken from the group consisting of the drying oils, semi-drying oils, drying alkyds, and semi-drying alkyds, of a non-reactive pigment, and of a minor effective amount of dibasic lead phosphite and lead salicylate as a stabilizer therefor, said salicylate being present in amount of approximately from 100% to 300% by weight of said phosphite.

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#### **Take Over Operations**

Imperial Paper and Color Corp. (Canada) Ltd., has purchased the dry color making equipment, formulas, good will and customer lists of Brandram-Henderson, Ltd., and will take over the firm's dry color operations.

Imperial will soon begin production at its St. Johns, Quebec, plant, according to an announcement made jointly by the two companies.

Brandram-Henderson, one of the original dry color producers in Canada, expects to cease its dry color manufacturing operations because of expanded paint manufacturing.



#### **New Southern Sales Office**

The Michigan Alkali Division of Wyandotte Chemicals Corp. has established two new sales offices in the South, according to S. B. Scott, director of sales.

The southeastern district office is located at 46 Fifth St., N.E., Atlanta, Ga. The southwestern office is at 304 National Bank Building, Baton Rouge, La.

Mr. Scott said that the building of new plants at Geismar, La., necessitated more concentrated coverage of the area, which includes Alabama, Georgia, Florida, North and South Carolina and eastern Tennessee in the southeast, and western Tennessee, Mississippi, Arkansas, Louisiana, Texas and New Mexico in the southwest.

Roger Moister has been appointed manager of the south-eastern office, and Scott Starkey manages the southwest office. David B. Bolander has been named resident salesman for the southwestern district, with headquarters in Houston, Tex.

Each of the men assigned to the new offices has been with Wyandotte for a number of years. Mr. Moister and Mr. Starkey have been in the territories covered by the new districts, and Mr. Bolander has been in the central district at Wyandotte.

#### **Divisions Consolidated**

Consolidation of Great Lakes Carbon Corp.'s Dicalite and Perlite Divisions into the newly organized Mining and Mineral Products Division has been announced by Walter Gramm, chairman of the board.

The two divisions have been given the status of departments in the larger division. The purpose, according to Mr. Gramm, is to consolidate the facilities and personnel of the divisions for maximum efficiency and economy of operation.

D. Loring Marlett, vice president of Great Lakes Carbon and formerly general manager of the Dicalite and Perlite Divisions, has been named general manager of the Mining and Mineral Products Division.

Joseph E. Moran, former assistant general manager of the Dicalite Division, has been appointed assistant general manager of the new division, which will be head-quartered in Los Angeles.

#### **Negotiate Merger**

Preliminary negotiations have been completed in the proposed merger of Spencer Kellogg and Sons, Inc., of Buffalo, N. Y., and the Beacon Milling Co., Inc., of Cayuga, N. Y.

A joint release by the directors of both firms stated that they have agreed in principle to a merger of their respective companies. An effective date of the consolidation is to be announced after stockholder approval and final negotiations, the release said.

The merger is to be effected by an exchange of capital stock on the basis of 1.3 shares of Spencer Kellogg for each share of Beacon.

The release said that Beacon will be represented on Spencer Kellog's Board of Directors by two members.

The merger with Beacon would provide Spencer Kellogg with a substantial outlet for co-products including soybean meal and linseed meal. The firm will also be more closely connected with feed manufacturing, which accounts for approximately 40 per cent of its end products.

# Now proven! IMPERIAL DISPERSIONS EFFECTIVELY BANISH LATEX COLOR DIFFICULTIES

SIMPLIFIED LATEX AND EMULSION PAINT MANUFACTURING



### Pastels Now Popular in Homes, Says Expert

A new trend in home decorating is revealed in the public demands for house paints, according to one

paint expert.

Guy J. Berghoff, general paint manager of Pittsburgh Plate Glass Co., said that, "Yesterday, the dark-darks, the deep greens, blues, browns and reds were the favorites. Almost overnight, the pale pastel tints have taken the public fancy in wall colors as well as fabrics."

Mr. Berghoff noted the difficulty with which paint manufacturers are keeping up with the public fancy in colors. As examples of public fickleness in color choices, he cited the "beige age" of a few years ago, the "turquoise-aqua binge" at the close of World War II, and the deep, dark era which followed.

He said that the arrival of the

"all-pink" kitchen probably set off the chain reaction of pastels which is now very evident.

Mr. Berghoff reported that, "Pastels in a wide variety of warm and cool colors are coming to the front at a fast pace and are being used throughout home interiors and exteriors."

He said that the introduction of tube colorants providing hundreds of formerly inaccessible tints to the average painter probably had much influence on the current trend.

"But to date," Mr. Berghoff pointed out, "no one has been able to put an accurate measuring device on what makes people reverse their tastes in color choices.

#### Jersey Manufacturers Aid Rutgers Paint Course

The Nuodex Products Co., Inc., of Elizabeth, N. J., will award prizes to two outstanding students in the Newark Rutgers Paint Technology classes at the close of the present term in May.

One prize will go to the outstanding student in the Fundamental Paint Technology class, and the other to the leading student in the Advanced Principles of Paint Technology class.

The awards will be reference books in paint technology.

The Nuodex Co. is one of a group of firms which have shown considerable interest and cooperation in the success of the special Rutgers classes. Seven firms in the area are inviting students to their laboratories or plants to study various phases of the manufacture of paints and varnishes.

Participating firms are the Resin Research Laboratories, E. I. du Pont de Nemours, DeVilbiss Co. and the Eclipse Airbrush Corp., all of Newark, the Shell Chemical Corp. of Union, the Celanese Corp. of Summit, and General Motors of Linden.

Other firms have loaned staff members as guest lecturers for the classes. William Lawrence, technical director of trade sales for Flood and Conklin Mfg. Co., is the instructor in both of the Rutgers courses.

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And Emulsion Composition

39, No. 2, pp. 114-125. (G. Britain).

It is fairly difficult, in view of the multiplicity of the factors involved, to establish a simple relationship between the composition and the properties of paints of the synthetic latex type. The composition of the polymer itself must play a prime role in the determination of the properties of an emulsion. This can be seen in studying the mechanical strength, the transmission of water vapor, the resistance to water and the resistance to aging of various systems: Co-polymers of vinyl acetate, with internal plasticization; the co-polymer of vinyl acetate-vinyl chloride; polyvinyl acetate; polystyrene. As these last three systems comprise the subsequent addition of a plasticizer, it is necessary likewise to consider the proportions of emulsifying agent and protective colloid. These polymers can influence the stability to a great extent.

The choice of the plasticizers is of an extreme importance, as regards certain mechanical properties and of the stability at various temperatures. Some emulsions of identical chemical composition can behave in very different fashions according to the size of the emulsified particles. Finally, the various additives necessary to the preparation of the emulsion should likewise be taken into consideration.

#### Electrostatic and "Catalytic" Charges as Causes of Fires

by R. Klose; Industrie Lackier Betrieb, vol. 23, No. 12, pp. 293-300.

The author has the objective of informing the industrialist on the possible causes of fire outbreaks in paint spraying plants and about which little is still known. The normal protective measures are ineffective against the fires caused by electrostatic and "catalytic" electrical

These are produced most often where one would expect them to be least, because it is not known sufficiently that the catalytic charges can be produced when operating with varnishes, black lacquers in particular.

The author classifies such causes of fires into three essential groups: technical nature, mechano-technical nature and chemico-physical nature. These are studied separately and in detail.

#### **High Dispersion Silicic** Acid (Aerosil)

Peintures-Pigments-Vernis, vol. 32, No. 6 (June 1956), p. 544.

The Aerosil product is discussed produced by the German Degussa concern. This is a form of silica of high dispersion, obtained in the gaseous phase by the pyrogenous decomposition of silicon tetrachloride. The particle dimensions which are located between 4 and 10 milli-microns are incredibly small and thus impart a high degree of the working properties of printing inks on the press.

The additions of this high dispersion silica to be used are about 0.5 to 1% in the case of newspaper and magazine printing on rotary presses, and from 0.8 to 1.5% in other cases. In this way, the consistency of the ink is brought to a determined value by stabilizing its viscosity in some manner and rendering the ink indifferent to temperature variations. An improvement is also obtained with the lifting of the sheet in the drying and the ink does not pass through the paper; as a result of this there is a greater clearness of printing obtained.

It is necessary to insure that the addition product be introduced into the ink before the incorporation of the black in the mineral oil, embossing ink, compound inks, linseed oil ink etc. In the case of printing inks for newspapers on rotaries, which have a low viscosity, the dispersed silica can preferably be incorporated by utilizing a rapid mixer turning at 1,500-3,000 r.p.m. Inks for general and jobbing work have a much higher viscosity; in this case it is preferable to utilize planetary mixers. In the case of very thick inks it is recommended to heat up to 60-80° C. so as to reduce the time required for the incorporation of the dispersed silica.

In a general manner, the following rules should be observed: the dispersion should always be made before the addition of the black or of the pigments. To avoid any apparition of "points" of

viscosity increase the dispersed silica should be introduced very slowly. If the dispersion is well made, as it should be, the final viscosity remains very close to the initial viscosity. conducted with a printing ink for books based on a pure linseed oil varnish, added with increasing quantities of this dispersed silica, showed interesting results.

In this way it was possible to reduce considerably the drying duration of the ink. When employed to the amount of 1 to 2.5% in aniline inks, it gave much deeper colors, the coloring obtained was clearer and more brilliant. In addition, the drying time was found to be similarly influenced and this allowed an increase in the printing

#### **Atomization Application** In Electrostatic Fields

by A. Astoric; Pitturi e Vernici, vol. II, No. 6, pp. 393-399.

The principles of the functioning of electrostatic paint spraying apparatus of the Ransburg type are reviewed. Two variations of this apparatus are available. In the first type, the electrostatic field necessary (about 100,000 volts) is obtained by a transformer, allowing a voltage at 7.5 mA. The painting booth comprises numerous electrodes whose length and number are a function of the parts to be painted.

The second system does not comprise electrodes which eliminates the possibility of spark discharge. The electrostatic field is obtained by coupling the transformer to the projection unit, which atomizes the paint by means of special rotary "bells" fed by gear pumps. The optimum fields of utilization of this apparatus are indicated and some examples are given of the results obtained in the varnishing of refrigerator cases, ranges, reflectors, etc.

#### Color Curves from Reflection Measurements

by G. Kortuem and G. Schreyer; Angewandte Chemie, vol. 67, No. 22, pp. 694-698.

The measurement procedure which was developed in former studies for the obtaining of "typical color curves" from reflection measurements was limited to the case in which the absorption power of the products examined was sufficiently small so that the alterations of the spectra obtained by the parts of regular reflection, were excluded. By admixture of the products to be examined with an appropriate standard of comparison, non-absorbent, this procedure can then be applied to products of any absorption.

It is shown that for these "mixtures", the Schuster-Kubella-Munk function f(R diff.) is exactly proportional to



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the molecular coefficient of extinction, so that the curves log.  $f(R_{diff.}) - \lambda$  represent the typical color curves of the products examined.

This procedure accordingly represents a reliable method of measurement in the domain of the spectroscopy by absorption. By way of example, the typical color curves of some pigmentary coloring materials are reproduced.

#### Radio-active Isotopes in the Study of Paint and Varnish Films

by C. K. N. Nair, P. G. Sharma and J. S. Aggarwal; Journ. Scien. and Indust. Research, New Delhi, vol. 14 B. No. 11, pp. 549-552.

The employment of radio-active tracers furnishes a practical means for the study of the permeability of paint and varnish films to water and to saline solutions. From this fact, it can be useful for evaluating the compositions of paints and varnishes. Use was made of Rubidium 86 for studying the diffusion of distilled water and of saline water through the thin films, obtained either by applying the paints and varnishes on a base support constituted by a gelatine membrane or else by applying the films on grass plates.

#### Polarographic Analysis Of Chromates

by J. Baltes and P. Wiertz, Fette und Seifen, vol. 57, No. 3, pp. 182-184.

A method of polarographic analysis of the chromates is described based on the electrochemical properties of the chromates. The procedure permits the analysis of these pigments in a single operation and can be applied to the lead and zinc chromates.

The estimation of the impurities contained in the commercial preparations can similarly be conducted polarographically after neutralization of the alkaline sodium solution by acetic acid. This neutralization eliminates lead chromate. The polarograms of the pure and commercial grades of chromates of zinc and lead are reproduced.

### Simplified Method for The Analysis of Alkyds

by A. Davidsohn, Paint Technology (G. Britain), vol. 19, No. 216, pp. 301-302.

The analysis of the alkyd resins is fairly complicated and very long; in particular, the usual method for the determination of the phthalic anhydride is difficult and requires considerable skill.

The method outlined by the author is much more rapid and is to be particularly recommended for running analyses; in particular for the determination of the quantities of the phthalic anhydride it measures the saponification index of the resin. From this, the percentage of phthalic anhydride is subsequently de-

#### CALENDAR OF EVENTS



April 7-12—ACS Spring Meeting, Div. of Paint, Plastics and Printing Ink Chemistry, Mc-Allister Hotel, Miami, Fla.

April 10-13. Twenty-first annual convention of the Southern Paint and Varnish Production Club, Soreno Hotel, St. Petersburg, Fla.

April 26-27. Southwest Paint Convention and Raw Material Exhibit, Shamrock Hotel, Houston.

April 29-May 4. American Oil Chemists Society, Roosevelt Hotel, New Orleans, La.

**Production Club Meetings** 

Baltimore, 2nd Friday, Park Plaza Hotel.

Chicago, 1st Monday, Furniture Mart.

C.D.I.C., 2nd Monday.

Cincinnati — Oct., Dec., Mar., May, Hotel Alms.

Dayton — Nov., Feb., April, Suttmilers.

Columbus — Jan., June, Sept., Fort Hayes Hotel.

Cleveland, 3rd Friday, Harvey Restaurant.

Dallas, 1st Thursday after 2nd Monday, Melrose Hotel.

**Detroit,** 4th Tuesday, Rachham Building.

Golden Gate, 3rd Monday, El Jardin Restaurant, San Francisco. Houston, Monday prior 2nd Tues-

day, Ship Ahoy Restaurant.

Kansas City, 2nd Thursday, Pickwick Hotel.

Los Angeles, 2nd Wednesday, Scully's Cafe.

Louisville, 3rd Wednesday, Seelbach Hotel.

Montreal, 1st Wednesday, Queen's Hotel.

New England, 3rd Thursday, University Club, Boston.

New York, 1st Thursday, Brass Rail, 100 Park Ave.

Northwestern, 1st Friday, St. Paul Town and Country Club. Pacific Northwest, Annual Meet-

ings Only.

Philadelphia, 3rd Wednesday,

Philadelphia Rifle Club. **Pittsburgh,** 1st Monday, Gateway Plaza, Bldg. 2.

Rocky Mountain, 2nd Wednesday. St. Louis, 3rd Tuesday, Kings-Way Hotel.

Southern, Annual Meetings Only. Toronto, 3rd Monday, Oak Room, Union Station.

Western New York, 1st Monday 40-8 Club, Buffalo. duced by a formula which gives this figure as a function of the saponification index, of the percentage of fatty acids and of the acid index of the fatty acids.

#### The Linear Visco-Elastic Behaviour of Paint Films

by N. A. Brunt; Journ. Oil and Color Chemists Association, vol. 38, No. 10, pp. 624-642, (G. Britain).

Two varnishes, one composed of pure thickened linseed oil, and the other of the same oil cooked with colophony, were studied in detail with the aid of the mechanical spectroscopic method. The aspect of the film and the influence of the temperature are indicated.

From the measurements affected, it can be concluded that the cooking of the oil with the resin has as a result the formation of molecular masses which are larger. If the elastic spectrum of the paint and the modifications induced by irradiation and by washing with water are known, it is possible to predict the practical behavior of the film.

The reduction of the resistance to weathering caused by the colophony must be attributed to the sensitivity to the action of water which this causes.

### French Research on Marine Anti-Fouling Paints

by V. Romanovsky; Peintures-Pigments-Vernis, vol. 32, No. 4, pp. 309-313.

Details are given of the work of the French research stations for the investigation of marine anti-fouling paints and some of the results obtained to date are discussed. Regarding the influence of the environment conditions on the test, the high temperature and the high amount of sunlight during the dry season, followed by a saturated humidity and atmospheric precipitations of the humid season, these have the following results. There is a disastrous effect on the protective agents and on bare metals without speaking of the discoloration of the majority of the paints exposed at the French Abidjan station. It is found that the exposure conditions accordingly in a saline tropical medium are much more severe than those in a temperature medium.

In the tests conducted, the principal characteristic was the high temperature of the sea water with the immersion tests. There were also variations of the salinity of the water. In warm waters it was found that the corrosion was extremely rapid. It is possible that salinity variations also favor this. The marine growths develop very rapidly during the dry season period. Their development is slowed, however, and for certain species, completely stopped during the humid season, the amounts of soft water causing the death of certain species. At the La Pallice test station, the anti.

fouling paints begin to lose their effectiveness at the end of six months while at the Abidjan station, where the above tropical conditions rule, the anti-fouling paints were effective for not longer than two months. It is accordingly considered that tests of anti-fouling paints should be conducted in a tropical environment; it is dangerous to translate the test results obtained at a temperate environment test station to tropical conditions.

#### Inks for Plastic Material and Sheet by J. L. Rabate; Peintures—Pigments-Vernis; vol. 32, No. 2, pp. 120-123.

The two principal methods for printing on moulded plastic parts are the silk screen process and offset printing. Both methods have their advantages and their limitations of employment.

It is necessary to work with inks which are compatible with the plastic material to be printed or decorated (appropriate pigments, solvents and plasticisers). Certain plastics are difficult to print on—polyethylene and the thermo-hardening plastics for example.

These inks must present an assembly of properties as near as possible to that of the plastic material on which they are being applied. This comprises not only chemical properties but physical ones. For printing on plastic sheet and film which will undergo considerable manipulation, inks should be used which provide films having an excellent adhesive and suppleness. From the chemical point of view, polyethylene should be printed with an ink containing polyethylene and the vinyl plastics with an ink based on a vinyl co-polymer.



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In those cases where this ideal solution can be applied, excellent results are obtained. However the insolubility characteristics of plastics often tend to act against this effect.

The ink films which are printed on plastic sheet films are very thin, but must have a high solids content to obtain the required opacity.

Polyvinyl Acetate Emulsion Paints by R. Colombet; Peintures—Pigments-Vernis, vol. 32, No. 2, pp. 131-135.

The author deals in detail with the characteristics of the polyvinyl acetate emulsion paints as influenced by various mediums and agencies. Once dry, the film is completely insoluble in water. It swells slightly in the presence of moisture but this characteristic is not dangerous. The adhesive power of the dry film, although a little diminished in

the humid state, recovers its full value after drying out again. The adherence in the humid state and the swelling of the film permit the transfer of water vapor. Consequently, these paints can be applied without any danger or trouble on to new walls which are still in the fresh condition, of cement or plaster and the paint can also be applied on to walls which are subjected to a more or less permanent humidity. Under such conditions the majority of the normal classical paints would scale or blister.

These paints are very elastic as regards the way they support additions of modifying substances and dilution. As delivered, these emulsions are very slightly acid because of the presence of traces of acetic acid. The pH can also be lowered by residual traces of hydrolysable free monomer. However, with a

suitably buffered emulsion, these variations are only very low, and only on rare occasions should the pH be lower than 5. The stability of the emulsions is excellent at higher values and this permits adjusting the pH according to the manufacturing needs, either with ammonia or any other alkaline buffer. This is notably the case if the protective colloids used are casein or lecithin, which require an alkaline pH.

For certain applications, the polyvinyl acetate emulsions can receive small additions of solvent. The quantity added should not exceed 10%. The solvents can be soluble or insoluble in water; ripening for at least 24 hours is necessary to permit the emulsion to regain its equilibrium. Finally, these emulsions can be combined with aqueous dispersions of natural or synthetic resins, with wax emulsions or of paraffin or oils, with other latex etc. The addition of mineral salts or organic products which have a coagulating action must be avoided.

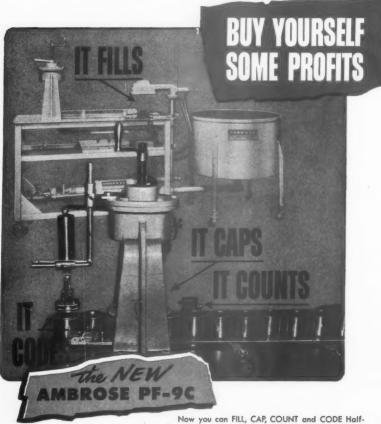
#### Graphite and Its Utilization in Paints

by G. Nedey; Peintures—Pigments-Vernis, vol. 32, No. 5, pp. 432-437.

After considering the general preparation and properties of graphite, the author then considers the use of graphite as a pigment in paints. By virtue of its high resistance to heat, to oxidation and to the most aggressive chemical agents (acids, alkalies, saline solutions and corrosive gases such as the halogens and sulfur dioxide) graphite finds extensive use as a pigment in protective coating paints for steelwork in industrial atmospheres. Also for steelwork which is operated at an elevated temperature, such as ducts, steel chimneys, etc. and for steelwork exposed to the corrosive action of sea water. Its coloring power and its opacifying power are satisfactory because of its high refractive index (.93 to 2.07). The dark color may be objectionable, it is then mixed with white pigments to obtain gray colored

The absorption power of graphite for oils and the usual suspension mediums is relatively low (40 grms. of linseed oil for 100 grms. of graphite). This has the result that the paints of linseed or standoil and graphite have such a high spread that the film is too thin to give sufficient resistance. To increase the dry film thickness and to improve its impermeability to liquids and gases it is accordingly necessary to add lead, zinc, iron pigments or filling (loading) materials such as carbonate of calcium or silica

Apart from its high spreading power, graphite pigment has two other inconveniences when it is used in the pure state as a paint pigment. First, the pigmentary particles have a tendency



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to agglomerate which renders it difficult in the application of the paint. In the second place, as with all lamellar pigments, (aluminium powder, micaceous iron oxide etc.) the graphite flakes orientate themselves in coatings parallel to the sub-surface and thus give a smooth and satiny surface to the dry film. The following coatings adhere badly on to this surface. This is a particularly disturbing defect for primer and intermediate coatings of a multicoat application.

The presence of impurities between the graphite flakes or the addition of pigments or of loading materials with spherical particles ensures to the dry film, a surface which is more or less granular and facilitates the mechanical keying of the subsequent coatings without impeding the orientation of the graphite in the same plane. It is not desirable to disturb this orientation, because the mutual overlapping of the graphite flakes provides a skin formation effect, in the same way as fish scales. This skin is without fissures, impermeable and chemically inert and its thickness corresponding to that of several flakes piled on one another, a definite barrier is imposed between the subsurface and external aggressive influences.

The particularly smooth surface structure of graphite paints has been profitably utilized in certain types of under-water paints to oppose the fixation and consequent fouling of underwater fauna and flora. The graphite paints have the particular characteristic of very easy brushability because of the lubricating effect of the graphite under the brush action.

It is known now that graphite does not inhibit a steel surface against corrosion. As graphite is chemically inert it can neither passivate the steel support against corrosion nor polarize the electrolytic couple which is the basis of corrosive attack. Actually, the graphite pigment can even favor the rust formation if it is in direct contact with the steel. However, if the graphite paint is carefully and correctly milled, there will be no danger of this. From what has been said, for particularly aggressive environments, such as for example gasworks or chemical works etc., the most suitable primer paint to employ is one comprising a mixture of an inhibitive pigment such as red lead together with graphite. Rust inhibition is provided by the red lead while the graphite serves to provide a sealing coat against the external aggressive corroding agents, liquid or gas. Although some schools of thought prefer to exclude the graphite from the primer coatings, there is no question of the inclusion of graphite in the intermediate and top coatings, under conditions of

extreme aggressive corroding attack; here graphited pigmented paints are necessary.

#### Aliphatic Hydrocarbon Solvents

by M. M. Gueneau; Peintures-Pigments-Vernis, vol. 32, No. 5, pp. 419-431.

The petroleum aliphatic hydrocarbon solvents are assuming an increasingly important position in the paint and varnish industry and an extended knowledge of their physical and chemical properties permits exploiting the full possibilities which they offer. One aspect of the production of petroleum solvents, particularly the more specialized types, is associated with the market possibilities, governed by demand. This in turn, can often be influenced by prejudice, ignorance, etc. As the market demand widens, so can often newer types be produced or the price

of the established types reduced. Market demands are in no way tied; they evolve according to the evolution of technical trends and developments.

One striking tendency in the paint industry is the trend to utilize the odorless aliphatic hydrocarbon solvents. The demand of this product is obvious. Everybody at one time or another has been inconvenienced by the disagreeable odor of paints.

#### **Thixotropic Paints**

by J. Baker; Paint Manufacture (G. Britain) vol. 25, No. 12, pp. 451-452.

The alkyd resin thixotropic enamel paints are of a solid consistency. They have recently made their appearance on the market and their use is developing rapidly. These paints are based on alkyd resins as the filming agent to which is added a polyamide resin while



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heating until the desired consistency is obtained. The final result is a mixed polymer which is present in the form of a colloidal suspension.

The principal characteristics of this class of paints are the absence of sedimentation, the ease of application and the durability. But the problem of the pigmentation remains partly unsolved, because although on the one hand, the flotation of certain pigments no longer is a problem, on the other hand certain pigments have a tendency to destroy the structure of the gel.

#### Measurements on Paint Films With the Garmsen Apparatus

by W. Garmsen; Schweiz. Archiv angew. Wiss und Technik, vol. 21, No. 9, pp. 301-307.

To compare the properties of differ-

ent lacquer films, the author made use of the Garmsen paint film testing apparatus. This apparatus determines the following measurements: fineness of milling, flow, formation tendency, time of drying at the surface and through the film, hiding power, yield, hardness, brilliancy, adhesion, relation between the thickness of the wet film and that of the dry film. The various tests are commented on and explained by numerous photographs and graphs.

Because of its multiple applications, this apparatus warrants extended use in paint research laboratories.

#### Preparation of Filming Oils From Semi-Drying Oils

by A. A. Ivanova; J. Prikl Khim, vol. 28, No. 7, pp. 718-728.

During the course of the oxidation of

semi-drying oils (cottonseed oil, etc.) there is the formation in their trigly-cerides, of OH groups, whose quantity diminishes subsequently during the course of the dehydration, with an increase in the degree of unsaturation of the oil. Thus, by oxidation, followed by dehydration of a semi-drying oil, one increases its speed of drying and improves greatly the mechanical properties of the film formed.

A method based on these observations was put into practice to obtain, starting from cotton seed oil, a film whose characteristics were close to that of the film formed by linseed oil. The oil is oxidized at 145 to 150° C in the presence of 7.5% of pentaerythritol and of resinate of lead and of manganese. The oil is subsequently dehydrated in the presence of sodium bisulfate. The oil thus obtained is suitable for the preparation of paints of dark tints. In the case of other semi-drying oils, very satisfactory results were obtained, by oxidation followed by dehydration, without the employment of pentaerythritol.

#### Kinetics of the Polymerisation of Oils

by A. Angelini: Pitturi e Vernici, Vol. 11, No. 11, pp. 699-704.

The knowledge of the constancy of the speed of polymerisation of the drying oils presents a certain technical interest, because it permits of calculating the heat of activation and the heat of polymerisation of an oil. On the base of these two orders one can deduce the energy which it is necessary to furnish to the oil to clear the preparatory period of the standolisation and, in other terms, the heat which must be furnished to an oil to produce the molecular re-arrangement which causes the subsequent condensation as well as the energy corresponding to the polymerisation itself.

The author reviews the phenomena which intervene successively in the polymerisation and the formulas are given, permitting of calculating the constancy of speed, the heat of activa-

tion etc.

LITHOGRAPHY

#### Pore Volume and Oil Absorption of Pigments

by G. E. Bessey and K. A. Lamminan: Journ. Oil and Color Chemists Assoc. (G. Britain), Vol. 38, No. 11, pp. 694-708.

The authors describe an apparatus and a method, permitting of measuring rapidly the pore space in a compressed powder, under a known pressure, the absolute density of the material being thus known.

For Spanish white, the void volume thus measured is equivalent to the exact absorption of the oil such as has been previously defined by the authors





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which suggests that this method should be capable of application to other pigments.

## Treatment of Alkali-Refined Linseed Oil

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by C. W. H. King and G. H. Hutchinson: Journ. Oil and Color Chemists Assoc. (G. Britain), Vol. 38, No. 11. pp. 673-693.

The palest standoils and alkyds are manufactured from linseed oil, refined with alkali and treated in a suitable manner with Fullers earth. The reduction of the coloration by the Fullers earth increases that which is produced during the course of subsequent heat treatments.

The determination of the peroxide index measures the degree of auto-oxidation of the oil; it has been confirmed that the oils showing a high peroxide index analagous to that which is attained after a prolonged storage in contact with air, can be utilized without any inconvenience for the manufacture of standoils in a closed vessel. On the contrary, a high peroxide index is undesirable when the oils are utilized in the manufacture of alkyds. In this case a considerable browning is observed and an accelerated speed of thickening during the manufacture.

#### Pigment Aluminium

by V.G. Liotta: Pitturi & Vernici (Italy), Vol. 11, No. 5, pp. 319-328.

The employment of aluminium powder as a pigment is well developed today. A study is given of pigment aluminium powder, passing successively in review the methods of manufacture of the granular and lamellar powders, the physio-chemical properties of the powders, namely as regards what concerns the leafing and non-leafing power (floating on the surface of a vehicle which is actually lighter by virtue of the action of surface tension forces) and the causes which can have influence on this characteristic.

The author then indicates the different filming agents which can be envisaged for aluminium: gum esters, spar varnishes, coumarone resins, terpene resins, phenol and alkyd resins, etc. Among the properties conferred on paints by aluminium pigment powder there are cited: reinforcement of the mechanical properties, opacity, resistance to humidity, high reflective power, low emissivity, etc. There is finally given a review of the methods of control, suitable for being used for aluminium pigment powders.

## Carbon Blacks for Protective and Decorative Coatings

Colores y Pint. Vol. 4, No. 21, 22 and 23, pp. 101-111, 149-160 and 193-206.

The methods of manufacture and the properties are described, such as: dimensions of the particles, chemical

and surface properties, structure etc. These are subsequently dealt with, the tests of quality, the description of the different types, classified according to the dimensions of the grains, the factors which determine the choice of a particular quality, then details are given as regards storage and handling.

The author examines also the different factors which have influence on the dispersability: these are first the physical qualities themselves of the product, then the nature of the filming agents (oils, varnish, resins etc.), those of the solvents and finally, the methods of incorporation.

Finally, details are given of all the precautions which need to be taken in practice: rules to observe for the preparation of the mixtures, dispersion, coloration, tests of solidity, reflective power, contraction, etc.

#### Painting of Construction Steel

Paint Technology (G. Britain), Vol. 19, No. 219, pp. 417-420, No. 220, pp. 15-17.

A survey is given of the third report of the Joint Technical Panel S/PI published by the British Iron and Steel Research Association concerning four series of tests, relative to the influence of the composition of paints on the protective properties when applied to constructional steel.

The study of primer paints served to show the superiority of the paints based on linseed oil and the importance of the film thickness. The introduction of metallic pigment such as aluminium improves their properties. A comparison was made of the different procedures of surface preparation, comprising flame scarfing and particularly sand blasting. Test parts which were



coated with tar and bitumen paints were similarly exposed, for six years, in various industrial centres. It was found that only the pigmented paints based on natural bitumen and on drying oils gave results which were equivalent to the test reference system (primer coating: linseed oil/red lead and finishing coating: linseed oil standoil/lead carbonate/barytine).

#### **Non-Saturated Esters** of Polyvinylic Alcohol

Journ. Oil and Color Chemists Assoc. (G. Britain) Vol. 39, No. 2, pp. 99-113.

The polyvinylic esters which are obtained by the action of acids of linseed oil in solution in phenol on polyvinylic alcohol show a great analogy in structure with the glycerides. extraction by solvent after esterification alone or after esterification followed by a heat treatment permits separation of

an insoluble fraction. This is pure polyvinylic ester, plus fractions which are mixtures of monomeric and polymeric esters and of others containing acid molecules which have not reacted.

The chemical and spectroscopic analyses of each fraction show that the esterification does not cause a loss of unsaturation. The non-esterized hydroxyl groups can form internal or external ether bridges. On the contrary, the heat treatment after esterification reduces considerably the quanity of polyvinylic ester formed and increases the proportion of secondary products: acid-ester complexes, polyenic residue.

#### Zinc Powder As **Protective Pigment**

by O. Roder: Farbe und Lack, Vol. 62, No. 2, pp. 51-58.

By virtue of the increasing interest

being devoted to zinc powders in the paint and varnish industries, their properties were studied by the author and the manner of using them to the best advantage for the protection of metallic surfaces was determined. Two types of zinc powder were examined in particular, these being marketed in These were the Zincoli standard powder and the Zincoli superfine. The fairly high price of these pigments is compensated for by the duration of their protective action. The tests which were conducted on paints based on a Zn/ZnO mixture were found to give remarkable protection under normal atmospheric conditions.

For the best results the author recommends paints strongly pigmented with zinc powder based on polystyrol, isomerized and chlorinated rubber and these can be likewise used as under-

water paints.

#### Soluble Coloring Matters and Their Use in Coatings

by J. K. Fishpool: Paint Technology (G. Britain), November 1955 and January 1956, pp. 371-374 and 11-14.

From the point of view of their utilization in the finish coating industries, it is preferable to classify the coloring matters not only solely according to their chemical constitution, but rather according to the following characteristics: (1) Colorants insoluble in water such as the mono-azoic pigment dyestuffs and the azines and their derivatives: (2) Basic colorants, soluble in water and their derivatives; (3) Acid colorants, soluble in water and their derivatives: acid pigment dyestuffs, amine derivatives, products of coprecipitation, metallic complexes. This third class is the most important for the number possible of its derivatives, which all show an excellent stability to light.

Various tables given resume the properties and usages of these different groups: Solubility in solvents, chemical resistance, light stability. Some particular applications are specially studied: Varnish for aluminum sheets, mordants and finishing products, stoving finishing products, inks for ball point pens.

#### Morphology of Pigments

by L. A. Jordan. Paintindia, Vol. 5, No. 9, pp. 23-26.

The electron microscope reveals much regarding the shape, dimension and distribution of the particles of pigments. There are now available different methods of the measurement of the specific surface of pigments. As this constitutes in fact, the interface between the pigment and the filming agent, it defines the interfacial relations. These interfacial relations have a great influence on the structure of a paint, its consistency, the covering power by opacity and the brilliancy of its film.



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In the same way, the electron microscope permits of studying the evolution and the different sections of a film of emulsion paint, of which the dispersion of the pigments is the determining factor for the covering power by opacity.

#### The Catalysed Phenolic Varnishes

by G. Genin: Peintures-Pigments-Vernis, Vol. 32, No. 5, pp. 438-440 (May 1956)

After stoving the phenolic resins provide very satisfactory finish coatings for metal parts and further development has been in the direction of producing a similar finish which can be applied to surfaces which are not capable of having a stoving temperature applied to them. Phenolic resins have accordingly been developed which are capable of being insolubilized and hardened at the ordinary temperature, after the addition of a suitable catalyst.

Varnish finishes of this type were manufactured in Germany during the last war for the coating of wood parts. Although the utilization of these varnishes has not yet developed very considerably it is quite certain that their employment will multiply as soon as they become better known because their properties are of interest to all finish technologists concerned with the protection of paper and wood.

The resins which lend themselves best to being transformed into infusible and insoluble products by the addition of a catalyst are the phenolformolic resins with a high content of formaldehyde. With the incorporation of a certain proportion of urea in these resins it is possible to obtain products with only a very slightly pronounced coloration. These resins are generally furnished in the form of solutions containing about 50% of dry residue, the solvents being generally constituted by alcohols.

For the conversion of these resins into an insoluble form, at normal temperature or at low temperature, acid catalysts are generally used. The proportion and the nature of the acid to utilize will obviously vary with the composition of the resin. When the varnish is intended to be applied on wood, it is preferable to use hydrochloric acid as the catalyst. The conversion of the resin is relatively rapid with this product with the advantage that the catalysed resin solution however is sufficiently stable after preparation to be stored for at least for two to three weeks. From this viewpoint, the catalyzed phenolic resins show a clearcut superiority over numerous finish products similarly catalyzed.

The coloration of the film obtained with the employment of a catalyst is The acid is likewise satisfactory. employed in the diluted form, generally in a solvent of the Cellosolve type. For

example, 1 part by weight of concentrated acid with 37% of hydrochloric acid is mixed with 4 parts by weight of Cellosolve. The diluted solution is then added to the varnish in such a manner that the quantity of concentrated acid employed represents 0.75 to 1.5% of acid by ratio to the weight of resin. Practically, this corresponds to adding 3.75 to 7.5 parts by weight of the diluted acid solution in the solvent to 100 parts of the phenolic resin solution. With this addition of catalyst, the preservation duration of the resin solution can attain two to six weeks if the product is kept in glass vessels; the storage temperature should be kept below 25° C.

With this addition of catalyst, the varnish will dry simply in the air or at a temperature not exceeding 60° C. If the stoving temperature of 60° C. can be exceeded, then one can then reduce

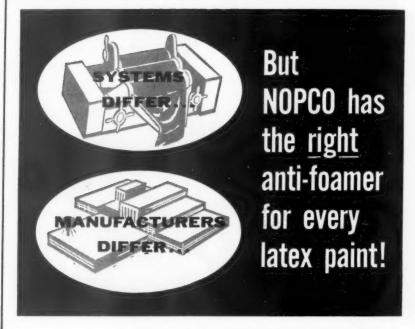
the proportion of accelerator added. In the case of varnish finishes which are intended to be applied on paper or cardboard it is preferable to use organic acids such as oxalic or maleic acid, whose action on the paper is less aggressive. As the catalytic action of these acids is less pronounced it is necessary to use a higher proportion of them

These catalyzed finishes are quite satisfactory for wood. They dry rapidly and adhere perfectly to the wood; they show a remarkable resistance to abrasion and have a suitable brilliancy.

#### Structure of Hydrolised Titanium Oxide

by C. De Rohden: Chimie et Industrie, Vol. 75, No. 2, pp. 287-291.

In the preparation of pigment titanium oxide, the TiO2 is precipitated by



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And since Nopco has been called in to help many plants, we have formulated new anti-foamers as they were needed-until today we have a complete line, both paste and liquid. If you would like to investigate the possibilities of a more efficient, more economical anti-foamer in your product, we would be happy to work with you. Just drop London, Canada us a line. Nopco Chemical Company, Harrison, N. J. hydrolysis of sulfuric acid solutions, obtained by the attack of ilmenite.

Examination by the electron microscope of the hydrolysate and of the colloidal solution which can be obtained from this, leads to the following conclusions:

1. The hydrolysate is a gel formed of very loose floculates of dimensions varying with the observation conditions;

2. It has a granular structure, the grains having a dimension of the order of 0.6 to 0.7 microns:

3. Each of these grains is formed by the agglutination of about 1,000 grains of about 60 to 75 mili-microns, cemented by the absorbed SO<sub>4</sub> ion.;

4. In each of the preceding grains there is found the size-order of 20 microcrystals of about  $20 \mathring{\text{A}}$  which are the germs added to the solution to cause the hydrolysis.

## Adhesion of Paints in A Humid Atmosphere

by D. M. James: Paper presented at Autumn Congress of British Oil and Color Chemists Assoc.

It is thought that the rapidity with which the loss of adherence is produced (it has been possible to observe this in less than 7 minutes on glass and in less than an hour on a primer) cannot be attributed essentially to the swelling of the finishing coating. This opinion is confirmed by the absence of correspondence between the properties of adherence of the finishing coatings and their absorption of water.

The hypothesis developed by the author is that the water traverses the finishing coat and then spreads along the separation surface between the finishing and the primer coatings, causing a

loosening and parting of the finishing coat. In addition, no relationship exists between the permeabilities to water of the finishing coatings and their adherence, because a very small quantity of water appears to be sufficient to destroy this. All the finishing coatings examined were found to be more or less permeable to water and the phenomenon is then produced rapidly. To confirm this hypothesis, it was found that the loss of adherence corresponds fairly well with the wetting properties of the primer coating, properties which can be placed in evidence by the measurement of the contact angle of water on these coatings.

It seems accordingly that it is the medium constituting the primer which plays the role of dominating factor in the adherence of the finishing coating. In general, oil favors a good adhesion, the oil-resin varnishes a bad one. With varnishes based on the alkyd resins or on the epoxy resins, the results are variable and appear to be particularly influenced by the pigmentation. Apart from the factor which is governed by the nature of the filming medium, the adhesion of a primer is improved if this is pigmented. A short drying before the application of the finishing coating

favors a good adhesion.

The finishing coat seems accordingly to have a smaller influence than the primer coating. The addition of aromatic solvents or of polar solvents does not improve the adhesion to a primer which has undergone a complete aging. The loss of adhesion can be retarded but not completely avoided, by a low permeability to water of the finishing coat. It results from this that it could be of interest to determine if the loss of adhesion can, under practical conditions, be transformed into a rupture of the top coating by the formation of blisters or even by a complete scalingoff of this coating. It is then that the absorption of water can play an important role.

The loss of adhesion under the test conditions, which comprised generally a contact of short duration with the water, can be reduced if one proceeds subsequently to a drying. However, cases exist where the action of humidity can cause a permanent loss of adherence. It is probable that in this case, the phenomena which are produced, are other than those making the object of the study.

A phenomena for which the author has not yet found an explanation is that sea water, in certain cases, does not cause loss of adhesion, while soft water can cause this phenomenon. An electrical method utilized to measure the permeability to water has however shown that sea water, placed in contact with a film, traverses this as rapidly as soft water.



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#### LATEX PAINTS

(From page 49)

small resin particles in water. Upon evaporation these particles come into direct contact with each other and fuse into a continuous film. Because the latex paint binder consists of particles, it will not penetrate into porous surfaces, will tend to bridge and present a more continuous uniform surface. Water soluble materials such as glues and adhesives of other types must be removed from the surface so that the latex will have a direct bond to the base. Likewise, greases, waxes and other materials resistant to water will prevent the latex particles from adhereing to the base surface.

Oil and grease should be removed either with a solvent or wetting agent dispersed in water. Where stains are involved or possibly staining from wallpaper, the surface should first be sealed using a primer sealer followed by pigmented top coat. All loose material such as spackling compounds, loose plaster or any loose or scaling material, should be removed before painting. Where cracks and areas have been filled in with spackling compounds, a more uniform paint job can be obtained by first covering these with a primer sealer.

Latex paints are resistant to alkali present in new plaster. A coat of latex paint can be applied to wet plaster, however, a second coat should not be applied until both the first coat and the plaster are dry.

The drying conditions of the room are extremely important. Low temperatures and high humidity could result in a poor paint job. A better rule would be to permit curing for about two weeks before applying a latex paint. Most latex paints will form a good paint film at 40° F, however painting temperatures of 50° F or more will remove the possibility of trouble from low temperature.

For interior application, latex paints will perform very well on bare or primed wood trim, primed or treated metal, masonry surfaces, fibre board, gypsum board and wallpaper. A latex paint made from styrene butadiene may be formulated to provide good vapor





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barrier properties and reduce the tendency of water vapor to move from the inside of a house to the

The use of latex paints in bathrooms and kitchens is becoming more and more acceptable. It is first necessary to sandpaper or treat a gloss or semigloss paint surface and then permit the paint film to dry and cure before wetting it down.

Latex paints may be formulated

to provide a dead flat sheen or

slight gloss appearance. In closing I would like to emphasize that the use of the words vinyl, acrylic or styrene butadiene in conjunction with a paint will not guarantee a quality paint. In order to realize the many advantages of latex paints, draw upon the experiences of your paint manufacturer. His recommendations will help you avoid the problems of the past.



#### LABORATORY INSTRUMENTS

An illustrated catalog contains listings of a complete line of ASTM thermometers and hydrometers as well as allied testing instruments.

Titled Catalog 57, the publication is available from the Nurnberg Thermometer Co., Dept. PVP, 124 Livingston St., Brooklyn 1, N. Y.

#### METHYLON RESINS

A revision and compilation of data sheets of the General Electric Methylon resins series combines all literature on the products into a single packet.

Data sheets include product details, suggested baking cycles, formulation and application aids and ordering instructions. Products included are Methylon resins and Methylon coating resin solutions.

Formulation suggestions are also included in the packet, along with a price schedule. General Electric Co., Chemical Materials Dept., Dept. PVP, 1 Plastics Ave., Pittsfield, Mass.

#### SYNTHETIC RESIN KETTLES

Bulletin LB-1 illustrates and describes a line of laboratory and pilot model synthetic resin kettles by the Brighton Corp., Dept. PVP, 820 State Ave., Cincinnati 4, Ohio.

Covered in the publication is a line of laboratory units for testing and processing synthetic resins, plastics, adhesives, varnishes and bodied oils. Units are either electrically, dowtherm or steam heated.

#### FORK TRUCK

Operating and maintenance features, specifications and dimensions of the Clarklift-40 fork truck of 4,000 pounds capacity are contained in a four-color, six-page brochure available from Industrial Truck Division, Clark Equipment Co., Dept. PVP, Battle Creek, Mich.

Drawings illustrate such features as swing back hood, self-adjusting brake, adjustable upright assembly and quickly removable counterweight. On-the-job photos show applications of the machine.

Also included are charts and graphs, which detail operating characteristics such as lift speeds, drawbar pull, capacities at various load centers and overall measurements.

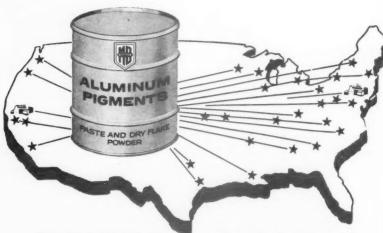
#### **ELECTRIC HEATERS**

The 1957 catalog of General Electric heaters and heating devices is available, containing a 16-page power requirements section, showing short and long form calculations for heating applications.

The 72-page publication includes information on such new products as redesigned cartridge heaters, miniature soldering irons, aluminized steel sheath strip heaters and new ratings and configurations of finned tubular heaters. Also described are ceramic-to-metal and plastic resin hermetic seals.

The power requirements section describes each heating process. Typical application problems are solved to give heating requirements in both a long and a short form method.

Designated bulletin GEC-1005H, the publication includes data, specifications, operating information and recommended price lists. General Electric Co., Dept. PVP, Schenectady 5, N. Y.



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#### WET PROCESSING EQUIPMENT

Three types of Eppenbach wet mixers and homogenizers are covered in a 24-page catalogue offered by Gifford-Wood Co., Dept. PVP, 420 Lexington Ave., New York 17, N. Y.

The equipment illustrated and described includes Colloid Mills for refining wet materials to very fine size; Homo-Mixers for fast blending and homogenizing of light to heavy viscosity materials; and Agi-Mixers for fast, intensive blending and homogenizing.

#### PAINT REMOVERS

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Paint and lacquer remover formulations containing solvents other than methylene chloride are evaluated by the Air Force in a study available through the U.S. Dept. of Commerce.

Materials were investigated for use as surface active agents, activating agents, thickeners, and evaporation retardants. The formulations included commonly available ingredients, many of which were evaluated for the removal of paint and lacquer coatings from metal.

The best experimental formulation developed was nitromethanetoluene-ethanol solvent mixture with a dibutyl amine-monoisopropyl amine-adipic acid thickener, a surface agent, and a paraffin evaporation retardant. It was slow in removing paint, however, and showed signs of deterioration after a month of storage.

The report, PB111921, "The Development and Evaluation of Paint Remover Used by the United States Air Force," Sam Collis, Wright Air Development Center, Jan. 1955, may be ordered from OTS, U. S. Dept. of Commerce, Washington 25, D.C. The 34page publication costs \$1.

#### PACKAGING ECONOMY

Packaging cost reduction is the subject of a revised "Little Packaging Library" booklet published by Hinde & Dauch, Dept. PVP, Sandusky, Ohio. Titled "How to Ship More

Economically in Corrugated Boxes," the 24-page booklet includes advice on the designing, testing and storing of product packages. It also offers information on the planning of the shipping

department and on economy considerations in the packing, sealing, warehousing and shipment of corrugated boxes.

Individual case histories pointing up cost savings through the use of specific corrugated box designs are also included in the booklet.

#### LABORATORY GLASSWARE

West German laboratory glassware is featured in a catalog issued by Kern Laboratory Supply Co., Dept. PVP, 8639 Venice Blvd., Los Angeles 34, Calif.

The catalog lists prices for Jena borosilicate glassware, Haldenwanger porcelainware, Eternabrand and Schellbach glassware

and other imported laboratory equipment.

#### METERS, VALVES, REGULATORS

A revised, condensed 28-page catalog covering Rockwell meters, valves and regulators has been introduced by Rockwell Manufacturing Co., Meter and Valve Division, Dept. PVP, 400 N. Lexington Ave., Pittsburgh 8, Pa.

The extensively illustrated catalog describes the recently introduced Rockwell telapilot and the Hypregun, a light, compact airoperating valve lubricant gun.

The publication also includes completely revised Nordstrom valve specifications.



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#### LABORATORY INSTRUMENTS

An attractively illustrated 14page catalog of laboratory and analytical instruments has been published by the Perkin-Elmer Corp., Dept. PVP, Norwalk, Conn.

The catalog describes the company's line of infrared and ultraviolet spectrophotometers, monochromators, flame photometers, vapor fractometers and accessories and instrument components available for use with them.

Also included is a brief description of the firm's process control instruments.

#### **PVAc FORMULATIONS**

Suggested paint formulations with Vinac WR-50 Polyvinyl Acetate Emulsion, a homopolymer, is the subject of a seven-page technical bulletin.

Formulations are suggested for a primer-sealer, an interior flat white and an exterior white. Also included is a listing of raw material

Titled Colton Technical Bulletin PVB-521A, the pamphlet is available from Colton Chemical Co., A Division of Air Reduction Co., Inc., Dept. PVP, 1747 Chester Ave., Cleveland 14, Ohio.

#### RED PIGMENT IDENTIFICATION

Technical Bulletin No. 25 on "Red Pigment Identification" has been compiled by the Kentucky Color and Chemical Co., Inc., Dept. PVP, Louisville 12, Ky.

The bulletin is described as a workable laboratory technique for evaluating red finishes, both as wet samples and as dry standard panels.

The five-page pamphlet covers bleed tests and typical bleeds, identification of chromate pigments, molybdenum and sulphides, plus additional tests.

#### INDUSTRIAL CERAMICS

The McDanel Refractory Porcelain Co., Dept. PVP, Beaver Falls, Pa., has produced a 16-page bulletin titled B1-56, covering industrial ceramics.

The publication illustrates high density and standard porcelain mill linings, lifter bars, special mill lining shapes, mill head assemblies, high density and standard porcelain grinding balls, and metal covered and ceramic laboratory jars for cradle or roller type laboratory mills.

The bulletin includes a complete list of all McDanel industrial ceramics, information on how to order, and dimensions of the products discussed.

#### ANGLE CENTRIFUGE

A four-page folder has been issued by Ivan Sorvall, Inc., Dept. PVP, Norwalk, Conn., on the "Servall" Superspeed SS-1 Angle Centrifuge. The literature describes the laboratory work tool that has a top speed of 16,000 rpm (32,700 x G), and a maximum capacity of 400 ml.

The latest development on the SS-1, a sealed rotor cover that prevents the escape of tube contents, is fully discussed. Other features covered include self-centering direct drive assembly, motor and transformer, and portability.

Specifications are also included in the illustrated folder.

#### MATERIALS HANDLING

A pocket-sized, 28-page booklet has been released on materials handling equipment by the Nutting Truck and Caster Co., Dept. PVP, Faribault, Minn.

Titled Booklet 57-S, the two-color publication illustrates trailers, drag-line trucks, dollies, jacks and skids, wagon trucks, barrel handling equipment, two-wheel trucks and four-wheel platform trucks, plus a variety of casters and special duty trucks.

Complete specifications are included on most popular items. "In use" illustrations show best methods of utilizing equipment.

#### WET GROUND MICA

Studies on the influence of wet ground mica on the adhesion characteristics of latex paint are contained in Technical Bulletin No. 28 of the Wet Ground Mica Assoc., Inc., Dept. PVP, 420 Lexington Ave., New York 17, N. Y.

The six-page pamphlet is illustrated with photos and tables. Such topics as adherence studies on glass, adherence studies on precoated steel and adherence studies on wood are embodied.

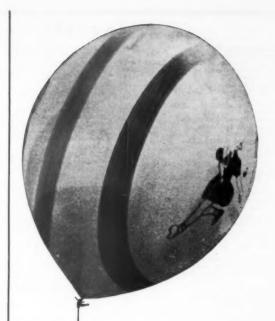
The pamphlet observes that in two groups of latex paints of limited adhesion characteristics, adherence was improved in all cases where mica was made a part of the pigmentation.

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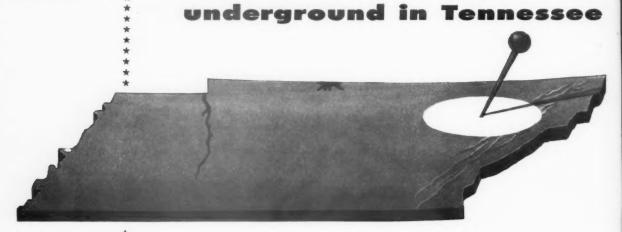
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But what about the future? With zinc's importance to Industry's ever-increasing demands, what about the supply?

In recent months, American Zinc has discovered a part of America's industrial future... underground in Tennessee. In the East Tennessee area, mining properties which adjoin American Zinc's long-established Mascot, Tenn., mining operations, exploration and development have confirmed zinc ore reserves underground which are equivalent to more than 75 years' production at the current rate of mines now operating in this area.

Tomorrow's zinc for automobile grills and trim...the galvanized coatings for steel...zinc for die-castings and brass... zinc pigments for paints and rubber...now lies underground in American Zinc's Tennessee development.



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